

BROWNFIELDS SITE ASSESSMENT (BSA) PROGRAM

Field Sampling Plan
for the
Crossroad Studios Site
BSA G177
5301 Houghton Avenue
Fort Worth, Tarrant County, Texas



Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. D
Austin, Texas 78753

May 2017

Approved by:

Rachel Forster 5-10-17
Rachel Forster date

TCEQ Project Manager

Steven P. Childress 5/12/17
Steven Childress date

TCEQ Project Quality Assurance
Specialist

K.M. Livingston 5/10/17
Kristian Livingston date

TCEQ Brownfields Program
Manager

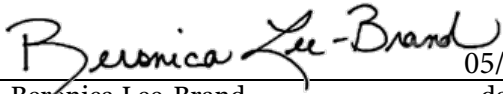
Amber Howard date

EPA Region 6 Brownfields Project
Officer


Grant No. *RP-00F67501* Document Control No.: FSP -#

Contractor Acknowledgement

I am responsible for some or all of the contracted activities conducted under this field sampling plan (FSP). I have reviewed this Crossroad Studios FSP and the *FY2017 TCEQ Quality Assurance Project Plan* for the Petroleum Storage Tank (PST) State Lead Program (Revision 0.0, Q-TRAK# 16-388) (QAPP). I understand this FSP and the QAPP together constitute the technical requirements for the site, and I understand that the terms of the current PST Site Activities Contract apply. I understand the project objectives and acknowledge receipt of the plan.



Beronica Lee-Brand 05/10/2017
Project Manager date
Daniel B. Stephens & Associates, Inc.



Bill Casadevall 05/10/2017
Project Quality Assurance Officer date
Daniel B. Stephens & Associates, Inc.

Laboratory Acknowledgement

I am responsible for some or all of the contracted activities conducted under this field sampling plan (FSP). I have reviewed this Crossroads Studio FSP and the *FY 2017 TCEQ Quality Assurance Project Plan for the Petroleum Storage Tank (PST) State Lead Program* (Revision 0.0, Q-TRAK# 16-388) (QAPP). I understand this FSP and the QAPP together constitute the technical requirements for the site, and I understand that the terms of the current PST Site Activities Contract apply. I understand the project objectives and acknowledge receipt of the plan.



05/10/2017

NAME

date

John Dupont, Laboratory Manager

DHL Analytical, Inc.

FSP Distribution List

Name	Title	Organization	Document No.
Beronica Lee-Brand	Project Manager	Daniel B. Stephens & Associates, Inc.	FSP-1
Bill Casadevall	Project QA Officer	Daniel B. Stephens & Associates, Inc.	FSP-2
John Dupont	Laboratory Manager	DHL Analytical, Inc.	FSP-3
Amy Gilbreath	Owner of Licensed Underground Storage Tank Contractor	Environmental Logistics Co., LLC	FSP-4
Rachel Forster	TCEQ Brownfields Project Manager	TCEQ	FSP-5
Kristian Livingston	TCEQ Brownfields Program Manager	TCEQ	FSP-6
Steven Childress	TCEQ Project QA Specialist	TCEQ	FSP-7
Amber Howard	EPA Region 6 Brownfields Project Officer	EPA	FSP-8

Table of Contents

Contractor Acknowledgement	2
Laboratory Acknowledgement	3
List of Acronyms	7
1.0 Introduction and Data Quality Objectives	8
1.1 Site Description and Background	8
1.2 Purpose	9
1.3 Problem Definition	9
1.4 Project Organization	11
1.5 Schedule of Activities	12
2.0 Site and Project Summary	16
2.1 Site Description and Background	16
2.2 Previous Investigations	16
2.3 Chemicals of Concern	16
3.0 Analytical Requirements	17
3.1 Analytical Requirements and Data Review Requirements	17
3.1.1 Soil Analytical Requirements	17
3.1.2 Aqueous Analytical Requirements	20
3.1.3 Data Review	23
3.1.4 Data Review Memorandum	23
4.0 Sampling Plan Design	25
4.1 Sampling Locations and Rationale	25
4.1.1 Tank-hold	25
4.2 Field Quality Control Samples	32
4.3 Sampling Methods and Sample Handling	33
4.3.1 Field Sampling Procedures	33
4.3.2 Chain-of-Custody Procedures	35
4.3.3 Sample Identification and Documentation of Sampling Activities	36
5.0 Additional Field Activities	38
5.1 Property Access	38
5.2 GPS Information	39
5.3 Equipment Decontamination	39
5.4 Investigation Derived Waste	39
5.5 Physical Removal of Underground Storage Tanks	40
5.5.1 Tank Preparation	40
5.5.2 Tank Removal	40
5.6 Site Restoration	41
5.7 Health and Safety	41
5.8 Deviations, Modifications, and/or Departures from this Approved FSP or QAPP	42
6.0 Exceptions, Additions, and Changes to the TCEQ Petroleum Storage Tank Lead Program QAPP	42
6.1 Project-Specific Laboratory Changes to Group A.0 (Project Management) and Group B.0 (Data Generation and Acquisition)	42
6.1.1 Method Detection Limits	42
6.1.2 Volatile Organic Compounds by EPA SW-846 Method 8260C	42
6.1.3 Polynuclear Aromatic Hydrocarbons by EPA SW-846 Method 8270D	43
6.1.4 Polynuclear Aromatic Hydrocarbons by EPA SW-846 Method 8270D-SIM	43

Tables

Table 1 Levels of Required Performance for VOCs in Soil by SW-846 Method 8260C	18
Table 2 Levels of Required Performance for PAHs in Soil by SW-846 Method 8270D	20

Table 3 Levels of Required Performance for VOCs in Aqueous Samples Analyzed by SW-846 Method 8260C	21
Table 4 Levels of Required Performance for PAHs in Aqueous Samples Analyzed By SW-846 Method 8270D-SIM	22
Table 5 Sample Rationale, Locations, and Analysis	28
Table 6 Frequency of Collection of Field Quality Control Samples	32

Figures

Figure 1 Project Organization Chart	14
Figure 2 Site Location Map	15
Figure 3 Sampling Location Map	24

Appendices

Appendix A : Data Quality Objectives	44
Appendix B: TCEQ Standard Operating Procedures	46
Appendix C: Laboratory NELAP Accreditation	88
Appendix D: Project Schedule	126

TCEQ SOPs

1.2	Preparation and Control
1.3	Site Restoration
1.4	Investigative-Derived Waste (IDW)
1.5	Decontamination
6.1	Documentation and Reporting
6.3	Volatile Organic Compound (VOC) Samples
6.4	Sample Handling and Control
6.5	Quality Control Samples
7.5	Measurement of Field Parameters
17.1	Global Positioning System Data Collection and Submission

List of Acronyms

AST	Above ground storage tank
BGL	Below ground level
COC	Chemical of concern
DQO	Data quality objectives
DUS	Data usability summary
EDD	Electronic data deliverable
EPA	U. S. Environmental Protection Agency
FB	Field blank
FD	Field duplicate
FSP	Field sampling plan
GPS	Global positioning system
HASP	Health and safety plan
HRS	Hazard Ranking System
H&SO	Health and Safety Officer
IDW	Investigation derived waste
IRA	Immediate removal
MCL	Maximum contaminant level
MDL	Method detection limit
ML	Method quantitation limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MS/MSD	Matrix spike/matrix spike duplicate
PAH	Polynuclear aromatic hydrocarbons
PCL	Protective concentration limit
PM	Project manager
ppb	Parts per billion
ppm	Parts per million
PST	Petroleum Storage Tank
PWS	Public water system
QAPP	TCEQ Quality Assurance Project Plan for the Petroleum Storage Tank State Lead Program
QA	Quality assurance
QC	Quality control
RCRA	Resource Conservation and Recovery Act
RDR	Release Determination Report
SDL	Sample detection limit
SOP	Standard operating procedure
SPLP	Synthetic Precipitation Leaching Procedure
SVOC	Semi volatile organic compound
TCEQ	Texas Commission on Environmental Quality
TRRP	Texas Risk Reduction Program
UST	Underground Storage Tank
VOA	Volatile organic analysis
VOC	Volatile organic compound
WO	Work order

1.0 Introduction and Data Quality Objectives

This site-specific field sampling plan (FSP) and the *FY 2017 Quality Assurance Project Plan for the Petroleum Storage Tank State Lead Program* (Revision 0.0, Q-TRAK# 16-388) (QAPP) constitute the Brownfields technical requirements for the Brownfields Phase II ESA at the Crossroads Studio Site (the Site). This FSP and QAPP together are a stand alone project document for the Site. The Contractor will submit the site-specific health and safety plan (HASP) concurrently with this FSP. The work associated with this FSP is being conducted under Contract No. 582-14-40641. The reference documents followed in the preparation of this FSP are EPA/540/G-91/013 “Guidance for Performing Preliminary Assessments under CERCLA,” EPA/540-R-92-021 “Guidance for Performing Site Inspections under CERCLA,” and those listed in Element A.1 of the QAPP.

The TCEQ Project Manager (PM) will distribute the QAPP and FSP to the TCEQ project personnel, the EPA Region 6 project personnel, and the Contractor.

1.1 Site Description and Background

The Site is located at 5301 Houghton Avenue, Fort Worth, TX, near the Lake Como. Figure 2 (Site Location Map) depicts the location of the Site within the city of Fort Worth. The Site is not occupied. The Site is developed with two single-story buildings and underground storage tank (UST) fuel systems. Historically, the site housed several service stations. The review of historical records indicates the Site was developed as early as 1936.

The site has been vacant since 1991. The UST fuel systems comprise three USTs on the northwest side of the building, one on the southwest side, and one possible UST detected on the northeast side directly beneath the pump island. One waste oil UST is adjacent to the west side of the building and identified as Tank 1 in this FSP, and is contained in a tank-hold. The propane tank is in the middle of the backyard and will be identified as Tank 2. Two USTs, identified in this FSP as Tank 3 and Tank 4, are located in a tank-hold directly west of the awning. Tank 5 is a possible fuel tank below the pump island. These on-site features are depicted in Figure 3 (Sampling Location Map). There are no Petroleum Storage Tank registration numbers associated with any of the tanks.

Land use in the surrounding area is residential. The topography at the Site is overall flat with a slight overall slope towards the east/northeast, towards Lake Como.

The Site is located within a stratified sequence of the Mesozoic Era, Cretaceous System, and Washita Group Series. The soils at the Site are identified as urban land with variable texture; these soils are well drained with slow infiltration rates.

In the area, groundwater is encountered at a depth of approximately 10 to 15 feet. In 2009, the direction of groundwater flow was to the north.

The known or suspected sources of chemicals of concern (COCs) are the on-site USTs and the associated piping and dispensers. The contaminant migration pathways of concern include, but not limited to, soil and shallow groundwater. Also of concern are possible explosive vapor concentrations from PSHs previously documented on the Site prior to issuance of the LPST site closure in December 2006.

1.2 Purpose

The purpose of the sampling event addressed in this FSP is to:

- Remove the UST systems (including fuel storage tanks and associated piping) and collect confirmation samples to determine if soils left in place after the tank removal contain hazardous substances at concentrations exceeding PST Action Levels;
- Remove the hydraulic car lifts and sample native soils beneath them to determine if soils left in place after the hydraulic car lifts are removed contain hazardous substances at concentrations exceeding PST Action Levels;
- Collect water samples, if water is present in the tank-hold after the tanks are removed, to determine if hazardous substances have released to the environmental media at concentrations greater than PST Action Levels; and
- Collect discrete grab samples per 50 cubic yards of backfill.

The Contractor will use the results from this sampling event to prepare a Release Determination Report (RDR). If the RDR demonstrates no release exceeding PST Action Levels has occurred, the Site may receive closure from the Brownfields (BF) Program under Title 30 of the Texas Administrative Code (TAC) Chapter 334.

Appendix A contains a table of data quality objectives (DQOs) for this sampling event.

1.3 Problem Definition

The Phase I ESA dated June 3, 2015 identified Recognized Environmental Conditions (RECs) as follows:

On-Site RECs:

- Although the Site was not listed in an LPST or UST database searched under this Phase I ESA, a permit was issued for the installation and use of two 1000-gallon USTs in 1956. In addition, the ground penetrating radar (GPR) survey conducted at the target property Site in August 2015 identified not only the 2 1000-gallon USTs (most likely the 13' x 3.5' tanks identified from the survey on the northwest side of the building) but potentially 3 additional USTs. Currently, a release at the Site has not been documented but due to the age of the permitted USTs and potential release of petroleum substances, the presence of the USTs represents a recognized environmental condition.

- The presence of a hydraulic lift remnant at the Site could be an indicator of a potential past spill area and hence represents a recognized environmental condition.

Off-Site REC:

- Circle Q is located at 3417 Horne Street in Fort Worth, Texas and represents a recognized environmental condition since this property is located at a higher elevation and up gradient from the Site with respect to groundwater flow and a release at the Circle Q property has caused groundwater to be affected.

The off-site REC will not be addressed in this FSP.

The potential vapor encroachment condition in conjunction with the UST system removal will not be investigated during this tank removal.

The potential impact to soils and groundwater on-site from the RECs is not known. The chemicals of concern are fuel-related hydrocarbons, including benzene, toluene, ethylbenzene and xylenes (BTEX), methyl tert-butyl ether (MTBE), and polynuclear aromatic hydrocarbons (PAHs). The environmental media of concern are surface soils and subsurface soils. If water is present in the tank-hold, groundwater will be an environmental medium of concern as well. At this time, potential receptors nearby are not known. To determine the investigation levels, the current land use is commercial/industrial and the future land use is anticipated to be commercial/industrial.

1.4 Project Organization

The project team for the Site comprises the TCEQ project manager (PM), the TCEQ project quality assurance (QA) Specialist, and the Contractor PM, project QA officer, health and safety officer (H&SO), the data reviewer, and the subcontracted laboratories for this sampling event. The TCEQ PM has the authority to stop work in order to safeguard programmatic objectives, worker safety, public health, or environmental protection. The Contractor has the authority to stop work in the field to ensure worker health and safety. Figure 1 (Project Organization Chart) presents the project team, lines of authority, and lines of communication for the project.

In addition to the roles and responsibilities set forth in Element A.4 of the QAPP, additional responsibilities for this project are:

The TCEQ Project Manager is responsible for:

- Determining the project data quality objectives (DQOs);
- Planning the project and completing the activities described in this FSP;
- Collecting and documenting the circumstantial information, e.g. photographs, and evidence of owner/operator information available at the Site, unless delegated to the contractor's PM;
- Preparing the work order (WO) and necessary amendments;
- Overseeing the activities of the contractor;
- Verifying the work is complete according to the WO, this FSP, and the QAPP;
- Reviewing and approving of contractor invoices, unless delegated otherwise; and
- Distributing the approved FSP, and each addendum, to the TCEQ and project personnel on the distribution list.

The Brownfields Program Manager is responsible for:

- Serving as point-of-contact with management counterparts at the EPA;
- Maintaining a thorough knowledge of program work activities, commitments, deliverables, and time frames;
- Developing necessary lines of communication and good working relationships between the lead division staff and personnel of other divisions and organizations participating in a program;
- Selecting project managers;
- Monitoring the effectiveness of the program quality system;
- Providing feedback to supervisory and administrative personnel as necessary regarding the performance of the grant and project managers;
- Advising supervisory personnel when program timetables, tasks, and coordination procedures are not being met;

- Elevating problems and issues requiring resolution to the lead Division Director, or designee(s), for disposition, when appropriate; and
- Executing contracts and intergovernmental agreements.

The TCEQ Project QA Specialist is responsible for:

- Reviewing and approving the FSP for the project;
- Providing technical assistance to the TCEQ Project Manager in the resolution of QA/QC or analytical chemistry issues; and
- Ensuring the project DQOs and measurement quality objectives (MQOs) are met by the contractor and analytical laboratory.

The Contractor is responsible for:

- Distributing the approved FSP, and each addendum, to Contractor personnel and subcontractors responsible for the work performed during this sampling event;
- Securing the signature from the laboratory documenting the laboratory has reviewed the analytical specifications of the FSP and QAPP and can meet the project objectives. The signature can be secure by original hard copy, fax, or by PDF transmittal via electronic mail;
- Performing work, including work performed by the laboratories and all subcontractors, which meet the requirements of the contract, WO and QAPP necessary to fulfill the DQOs;
- Providing appropriate personnel to complete the project within the required timeframe;
- Verifying all on-site personnel adhere to the site-specific HASP;
- Communicating with the TCEQ PM and following any specific instructions issued;
- Communicating agreed upon changes to the subcontractors;
- Timely submittal of invoices; and
- Determining the type, frequency, and mechanism of communication with subcontractors; the roles and responsibilities of subcontractors; the procedures to monitor subcontractors.

1.5 Schedule of Activities

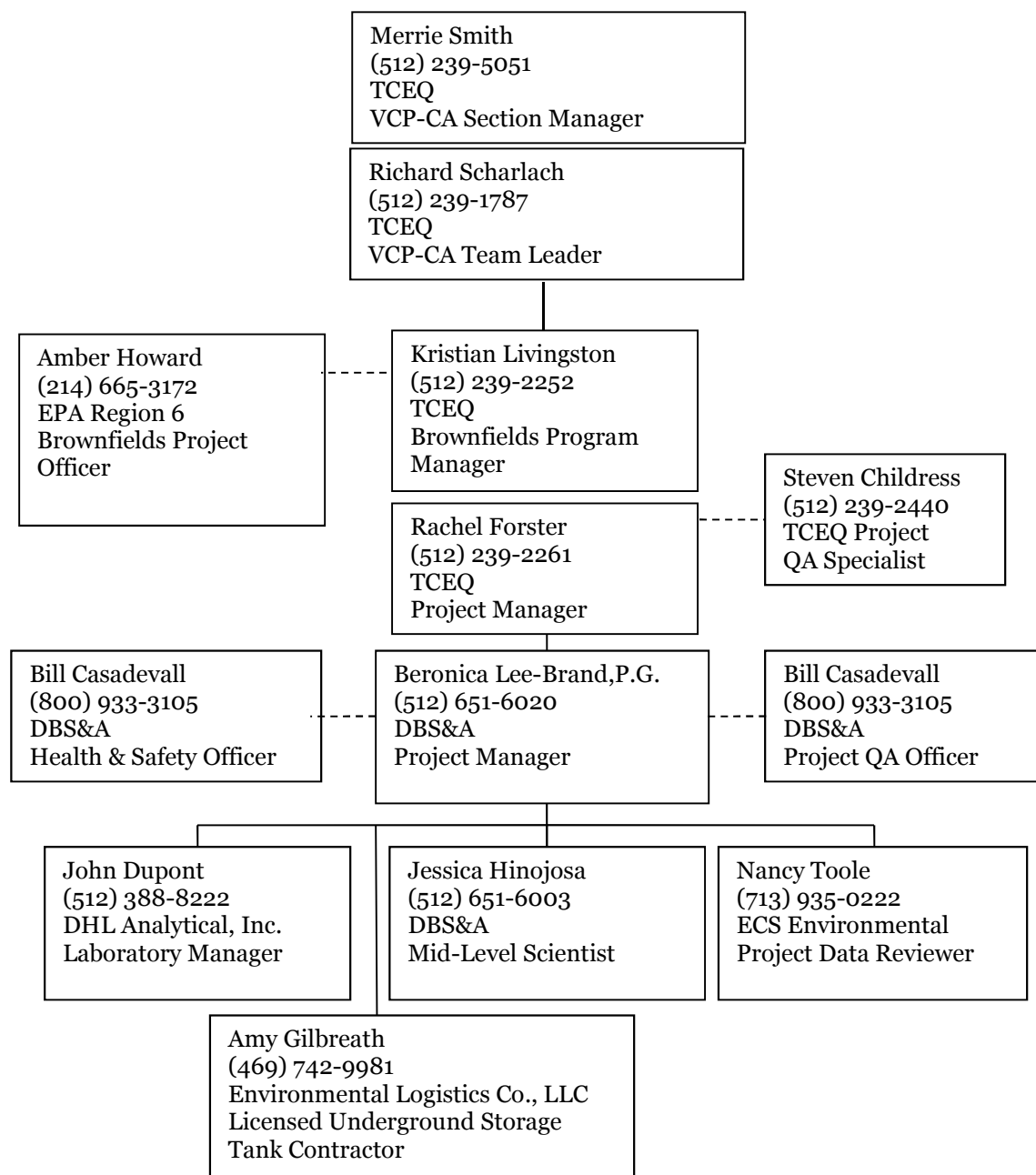
The sampling event will follow the schedule given in the project schedule, included as Appendix D of this FSP. If additional work is added by the TCEQ beyond the proposed scope, the due dates of the project tasks listed in the project schedule will be modified accordingly in the amended schedule. The following tasks related to the collection of environmental samples are:

- Task 1: Prepare the HASP and review the FSP.
- Task 2: Mobilize to the Site and collect a GPS coordinate; remove five USTs, associated piping, and fuel dispensers; remove the hydraulic car lifts and

associated underground sumps; collect the appropriate number of soil and water samples; and ship samples to the laboratory for analysis.

- Task 3: Review the laboratory data and submit the data review summary and associated analytical data packages.
- Task 4: Prepare and submit the Release Determination Report.
- Task 5: Coordinate with a landfill for waste disposal classification/acceptance and remove investigation-derived waste.

Figure 1 Project Organization Chart



Site Location Map

Explanation

Property Boundary

Daniel B. Stephens & Associates, Inc.
Texas Registered Geosciences Firm No. 50045

CROSSROADS STUDIO
BSA: G177
5301 HOUGHTON AVENUE
FORT WORTH, TEXAS 76107

Site Location Map

N:\Client\TOEQ-A\RSIDB17.1013.00_BSAG177_Crossroads Studio\GISIMXD\Site_Location_Map_Crossroads Studio.mxd

02/03/2017

DB17.1013.00

Figure 2

2.0 Site and Project Summary

2.1 Site Description and Background

Refer to Section 1.1 for information on the site description and background.

2.2 Previous Investigations

CB&I conducted a Phase I Environmental Site Assessment (ESA) of the commercial property in February 2017.

RECs Identified:

- Although the Site was not listed in an LPST or UST database searched under this Phase I ESA, a permit was issued for the installation and use of two 1000-gallon USTs in 1956. In addition, the GPR survey conducted at the target property Site in August 2015 identified not only the 2 1000-gallon USTs (most likely the 13' x 3.5' tanks identified from the survey on the northwest side of the building) but potentially 3 additional USTs. Currently, a release at the Site has not been documented but due to the age of the permitted USTs and potential release of petroleum substances, the presence of the USTs represents a recognized environmental condition.
- The presence of a hydraulic lift remnant at the Site could be an indicator of a potential past spill area and hence represents a recognized environmental condition.
- Circle Q is located at 3417 Horne Street in Fort Worth, Texas and represents a recognized environmental condition since this property is located at a higher elevation and up gradient from the Site with respect to groundwater flow and a release at the Circle Q property has caused groundwater to be affected.

UST Geophysical Survey Report dated August 17, 2015

Four, possibly five, USTs were detected at the Site. Three USTs are located on the northwest side of Building 1, one UST is located in the southwest corner of the Site in the middle of a backyard, and one possible UST was detected on the northeast side of Building 1 directly beneath the pump island (see Figure 3 Sampling Location Map).

2.3 Chemicals of Concern

The chemicals of concern (COCs) known or reasonably anticipated to be associated with petroleum fuel activities conducted on the Site are:

Volatile Organic Compounds (VOCs):

- Benzene
- Toluene
- Ethylbenzene
- Total Xylenes
- Methyl tert-butyl ether (MTBE)

PAHs (Polynuclear aromatic hydrocarbons):

- Acenaphthene
- Anthracene
- Acenaphthylene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Chrysene
- Dibenz(a,h)anthracene
- Dibenzofuran
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

3.0 Analytical Requirements

3.1 Analytical Requirements and Data Review Requirements

The level of required performance (LORP) is the concentration against which the data will be compared. The data from this sampling event will be compared to the PST Action Levels to determine if the COCs listed in Section 2.3 have released to environmental media. The results for soil samples will be compared to the PST Action Levels for soil based on the respective depth. The results for water samples will be compared to the PST Action Levels for groundwater. The analytical measurement performance criteria are specified in Element B of the QAPP.

3.1.1 Soil Analytical Requirements

Soil samples will be analyzed for VOCs (SW-846 Methods 5035A/8260C), and total petroleum hydrocarbons (TPH) (SW-846 Method 5035A/TCEQ Method 1005). If the

laboratory analysis of TPH indicates hydrocarbons are present in the >nC12 hydrocarbon range, the sample with the highest concentration of hydrocarbons in the >nC12 range will be analyzed for polynuclear aromatic hydrocarbons (PAHs) (SW-846 Methods 3550C/8270D). Soil analytical results will be reported on a dry weight basis.

Tables 1 and 2 list the COCs, the analytes, and the LORPs in soils for this sampling event. Analytes designated as COCs for this assessment are denoted with an "X" in Tables 1 and 2. TPH does not have a PST Action Level, as noted on page 6 of RG-411; therefore, TPH is not listed as a COC for this site. The method quantitation limits (MQLs) for the COCs must be lower than the LORP unless the TCEQ PM has determined the MQL will meet the project objectives and approved the use of an MQL greater than the LORP. Otherwise, the Contractor will use a more sensitive analytical method. The PST Action Levels are taken from the revised August 12, 2011 table.

Table 1 Levels of Required Performance for VOCs in Soil by SW-846 Method 8260C

COC	Analyte	CAS No.	PST Action Levels or TRRP Tier 1 GW _{Soil} PCLs		Lab MQL (mg/kg)	Is Lab MQL <LORP? (Y/N)
			Surface (0-15 ft) (mg/kg)	Subsurface (>15 ft) (mg/kg)		
<input type="checkbox"/>	Acetone	67-64-1	43	43	0.05	Y
<input checked="" type="checkbox"/>	Benzene	71-43-2	0.12	0.12	0.005	Y
<input type="checkbox"/>	Bromobenzene	108-86-1	2.3	2.3	0.005	Y
<input type="checkbox"/>	Bromodichloromethane	75-27-4	0.065	0.065	0.005	Y
<input type="checkbox"/>	Bromoform	75-25-2	0.63	0.63	0.005	Y
<input type="checkbox"/>	Bromomethane	74-83-9	0.13	0.13	0.005	Y
<input type="checkbox"/>	Butylbenzene, n-	104-51-8	150	150	0.005	Y
<input type="checkbox"/>	Butylbenzene, sec-	135-98-8	85	85	0.005	Y
<input type="checkbox"/>	Butylbenzene, tert-	98-06-6	100	100	0.005	Y
<input type="checkbox"/>	Carbon disulfide	75-15-0	14	14	0.005	Y
<input type="checkbox"/>	Carbon tetrachloride	56-23-5	0.062	0.062	0.005	Y
<input type="checkbox"/>	Chlorobenzene	108-90-7	1.1	1.1	0.005	Y
<input type="checkbox"/>	Chlorobromomethane	74-97-5	3	3	0.005	Y
<input type="checkbox"/>	Chloroethane	75-00-3	31	31	0.005	Y
<input type="checkbox"/>	Chloroform	67-66-3	1	1	0.005	Y
<input type="checkbox"/>	Chlorohexane, 1-	544-10-5	39	39	0.005	Y
<input type="checkbox"/>	Chloromethane	74-87-3	0.41	0.41	0.005	Y
<input type="checkbox"/>	Chlorotoluene, o-	95-49-8	9.1	9.1	0.005	Y
<input type="checkbox"/>	Chlorotoluene, p-	106-43-4	11	11	0.005	Y
<input type="checkbox"/>	Cumene	98-82-8	350	350	0.005	Y
<input type="checkbox"/>	Cyclohexane	110-82-7	5900	5900	0.015	Y
<input type="checkbox"/>	Cymene	99-87-6	230	230	0.005	Y
<input type="checkbox"/>	Dibromo-3-chloropropane, 1,2-	96-12-8	0.0017	0.0017	0.005	N
<input type="checkbox"/>	Dibromochloromethane	124-48-1	0.049	0.049	0.005	Y
<input type="checkbox"/>	Dichlorobenzene, 1,2-	95-50-1	18	18	0.005	Y
<input type="checkbox"/>	Dichlorobenzene, 1,3-	541-73-1	6.7	6.7	0.005	Y
<input type="checkbox"/>	Dichlorobenzene, 1,4-	106-46-7	2.1	2.1	0.005	Y
<input type="checkbox"/>	Dichlorodifluoromethane	75-71-8	240	240	0.005	Y
<input type="checkbox"/>	Dichloroethane, 1,1-	75-34-3	18	18	0.005	Y
<input type="checkbox"/>	Dichloroethane, 1,2-	107-06-2	0.014	0.014	0.005	Y
<input type="checkbox"/>	Dichloroethylene, 1,1-	75-35-4	0.05	0.05	0.005	Y

COC	Analyte	CAS No.	PST Action Levels or TRRP Tier 1 GW ^{Soil} ing PCLs		Lab MQL (mg/kg)	Is Lab MQL <LORP? (Y/N)
			Surface (0-15 ft) (mg/kg)	Subsurface (>15 ft) (mg/kg)		
<input type="checkbox"/>	Dichloroethylene, cis-1,2-	156-59-2	0.25	0.25	0.005	Y
<input type="checkbox"/>	Dichloroethylene, trans-1,2	156-60-5	0.49	0.49	0.005	Y
<input type="checkbox"/>	Dichloropropane, 1,2-	78-87-5	0.023	0.023	0.005	Y
<input type="checkbox"/>	Dichloropropane, 1,3-	142-28-9	0.064	0.064	0.005	Y
<input type="checkbox"/>	Dichloropropane, 2,2-	594-20-7	0.12	0.12	0.005	Y
<input type="checkbox"/>	Dichloropropene, 1,1-	563-58-6	0.13	0.13	0.005	Y
<input type="checkbox"/>	Dichloropropene, cis 1,3-	10061-01-5	0.0066	0.0066	0.005	Y
<input type="checkbox"/>	Dichloropropene, trans 1,3-	10061-02-6	0.036	0.036	0.005	Y
<input checked="" type="checkbox"/>	Ethylbenzene	100-41-4	36.8	36.8	0.005	Y
<input type="checkbox"/>	Ethylene dibromide	106-93-4	0.00021	0.00021	0.005	N
<input type="checkbox"/>	Hexachlorobutadiene	87-68-3	3.3	3.3	0.005	Y
<input type="checkbox"/>	Hexanone, 2-	591-78-6	0.32	0.32	0.015	Y
<input type="checkbox"/>	Methyl acetate	79-20-9	49	49	0.015	Y
<input type="checkbox"/>	Methyl cyclohexane	108-87-2	16000	16000	0.015	Y
<input type="checkbox"/>	Methyl ethyl ketone (2-Butanone)	78-93-3	29	29	0.015	Y
<input type="checkbox"/>	Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	4.9	4.9	0.015	Y
<input type="checkbox"/>	Methylene bromide	74-95-3	1.1	1.1	0.005	Y
<input type="checkbox"/>	Methylene chloride	75-09-2	0.013	0.013	0.005	Y
<input checked="" type="checkbox"/>	MTBE (methyl tert-butyl ether)	1634-04-4	2.56	2.56	0.005	Y
<input type="checkbox"/>	Naphthalene	91-20-3	31	31	0.015	Y
<input type="checkbox"/>	Propylbenzene, n-	103-65-1	45	45	0.005	Y
<input type="checkbox"/>	Styrene	100-42-5	3.3	3.3	0.005	Y
<input type="checkbox"/>	Tetrachloroethane, 1,1,1,2-	630-20-6	1.4	1.4	0.005	Y
<input type="checkbox"/>	Tetrachloroethane, 1,1,2,2-	79-34-5	0.023	0.023	0.005	Y
<input type="checkbox"/>	Tetrachloroethylene	127-18-4	0.050	0.050	0.005	Y
<input checked="" type="checkbox"/>	Toluene	108-88-3	39.1	39.1	0.005	Y
<input type="checkbox"/>	Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	80000	80000	0.015	Y
<input type="checkbox"/>	Trichlorobenzene, 1,2,3-	87-61-6	26	26	0.005	Y
<input type="checkbox"/>	Trichlorobenzene, 1,2,4-	120-82-1	4.8	4.8	0.005	Y
<input type="checkbox"/>	Trichloroethane, 1,1,1-	71-55-6	1.6	1.6	0.005	Y
<input type="checkbox"/>	Trichloroethane, 1,1,2-	79-00-5	0.02	0.02	0.005	Y
<input type="checkbox"/>	Trichloroethylene	79-01-6	0.034	0.034	0.005	Y
<input type="checkbox"/>	Trichlorofluoromethane	75-69-4	130	130	0.015	Y
<input type="checkbox"/>	Trichloropropane, 1,2,3-	96-18-4	0.00053	0.00053	0.005	N
<input type="checkbox"/>	Trimethylbenzene, 1,2,4-	95-63-6	49	49	0.005	Y
<input type="checkbox"/>	Trimethylbenzene, 1,3,5-	108-67-8	53	53	0.005	Y
<input type="checkbox"/>	Vinyl chloride	75-01-4	0.022	0.022	0.005	Y
<input checked="" type="checkbox"/>	Xylenes, total	1333-20-7	117	117	0.005	Y

**Table 2 Levels of Required Performance for PAHs in Soil by SW-846
Method 8270D**

COC	Analyte	CAS No.	PST Action Levels		Lab MQL (mg/kg)	Is Lab MQL <LORP (Y/N)
			Surface (0-15 ft) (mg/kg)	Subsurface (>15 ft) (mg/kg)		
<input checked="" type="checkbox"/>	Acenaphthene	83-32-9	34.1	34.1	0.03	Y
<input checked="" type="checkbox"/>	Acenaphthylene	208-96-8	54.7	54.7	0.03	Y
<input checked="" type="checkbox"/>	Anthracene	120-12-7	2.04	2.04	0.03	Y
<input checked="" type="checkbox"/>	Benz-a-anthracene	56-55-3	0.877	7.10	0.03	Y
<input checked="" type="checkbox"/>	Benzo-a-pyrene	50-32-8	0.0877	3.09	0.03	Y
<input checked="" type="checkbox"/>	Benzo-b-fluoranthene	205-99-2	0.877	3.61	0.03	Y
<input checked="" type="checkbox"/>	Benzo-g,h,i-perylene	191-24-2	0.824	0.824	0.03	Y
<input checked="" type="checkbox"/>	Benzo-k-fluoranthene	207-08-9	1.35	1.35	0.03	Y
<input checked="" type="checkbox"/>	Chrysene	218-01-9	1.24	1.24	0.03	Y
<input checked="" type="checkbox"/>	Dibenz-a,h-anthracene	53-70-3	0.0877	1.91	0.03	Y
<input checked="" type="checkbox"/>	Dibenzofuran	132-64-9	48.8	48.8	0.03	Y
<input checked="" type="checkbox"/>	Fluoranthene	206-44-0	25.5	25.5	0.03	Y
<input checked="" type="checkbox"/>	Fluorene	86-73-7	30.2	30.2	0.03	Y
<input checked="" type="checkbox"/>	Indeno-1,2,3-cd-pyrene	193-39-5	0.877	26.0	0.03	Y
<input checked="" type="checkbox"/>	Naphthalene	91-20-3	99.7	99.7	0.03	Y
<input checked="" type="checkbox"/>	Phenanthrene	85-01-8	28.2	28.2	0.03	Y
<input checked="" type="checkbox"/>	Pyrene	129-00-0	10.3	10.3	0.03	Y

3.1.2 Aqueous Analytical Requirements

Aqueous samples will be analyzed for VOCs by SW-846 Methods 5030C/8260C, PAHs by SW-846 Methods 3510C/8270D-selective ion monitoring (SIM), and TPH by TCEQ Method 1005. TPH does not have a PST Action Level, as noted on page 6 of RG-411; therefore, TPH is not listed as a COC for this site. Tables 3 and 4 list the COCs, the analytes, and the LORPs in water for this sampling event. Analytes designated as COCs for this assessment are denoted with an “X” in Tables 3 and 4. The MQLs for the COCs must be lower than the LORP unless the TCEQ PM has determined the MQL will meet the project objectives and approved the use of an MQL greater than the LORP.

Otherwise, the Contractor will use a more sensitive analytical method. If the laboratory analysis of TPH indicates hydrocarbons are present in the >nC12 hydrocarbon range, the sample with the highest concentration of hydrocarbons in the >nC12 range will be analyzed for PAHs. The PST Action Levels in Tables 3 and 4 for water are taken from the revised August 12, 2011 table.

Table 3 Levels of Required Performance for VOCs in Aqueous Samples Analyzed by SW-846 Method 8260C

COC	Analyte	CAS No.	PST Action Level or TRRP Tier 1 GW _{GW_{Ing}} PCL (mg/L)	Lab MQL (mg/L)	Is Lab MQL < LORP? (Y/N)
<input type="checkbox"/>	Acetone	67-64-1	22	0.015	Y
<input checked="" type="checkbox"/>	Benzene	71-43-2	0.005	0.002	Y
<input type="checkbox"/>	Bromobenzene	108-86-1	0.20	0.001	Y
<input type="checkbox"/>	Bromodichloromethane	75-27-4	0.015	0.001	Y
<input type="checkbox"/>	Bromoform	75-25-2	0.12	0.001	Y
<input type="checkbox"/>	Bromomethane	74-83-9	0.034	0.001	Y
<input type="checkbox"/>	Butylbenzene, n-	104-51-8	1.20	0.001	Y
<input type="checkbox"/>	Butylbenzene, sec-	135-98-8	0.98	0.001	Y
<input type="checkbox"/>	Butylbenzene, tert-	98-06-6	0.98	0.001	Y
<input type="checkbox"/>	Carbon disulfide	75-15-0	2.4	0.015	Y
<input type="checkbox"/>	Carbon tetrachloride	56-23-5	0.005	0.001	Y
<input type="checkbox"/>	Chlorobenzene	108-90-7	0.1	0.001	Y
<input type="checkbox"/>	Chlorobromomethane	74-97-5	0.98	0.001	Y
<input type="checkbox"/>	Chloroethane	75-00-3	9.8	0.001	Y
<input type="checkbox"/>	Chloroform	67-66-3	0.24	0.001	Y
<input type="checkbox"/>	Chlorohexane, 1-	544-10-5	0.98	0.005	Y
<input type="checkbox"/>	Chloromethane	74-87-3	0.07	0.001	Y
<input type="checkbox"/>	Chlorotoluene, o-	95-49-8	0.49	0.001	Y
<input type="checkbox"/>	Chlorotoluene, p-	106-43-4	0.49	0.001	Y
<input type="checkbox"/>	Cumene	98-82-8	2.4	0.001	Y
<input type="checkbox"/>	Cyclohexane	110-82-7	120	0.001	Y
<input type="checkbox"/>	Cymene	99-87-6	2.4	0.001	Y
<input type="checkbox"/>	Dibromo-3-chloropropane, 1,2-	96-12-8	0.0002	0.010	N
<input type="checkbox"/>	Dibromochloromethane	124-48-1	0.011	0.001	Y
<input type="checkbox"/>	Dichlorobenzene, 1,2-	95-50-1	0.6	0.001	Y
<input type="checkbox"/>	Dichlorobenzene, 1,3-	541-73-1	0.73	0.001	Y
<input type="checkbox"/>	Dichlorobenzene, 1,4-	106-46-7	0.075	0.001	Y
<input type="checkbox"/>	Dichlorodifluoromethane	75-71-8	4.9	0.001	Y
<input type="checkbox"/>	Dichloroethane, 1,1-	75-34-3	4.9	0.001	Y
<input type="checkbox"/>	Dichloroethane, 1,2-	107-06-2	0.005	0.001	Y
<input type="checkbox"/>	Dichloroethylene, 1,1-	75-35-4	0.007	0.001	Y
<input type="checkbox"/>	Dichloroethylene, cis-1,2-	156-59-2	0.07	0.001	Y
<input type="checkbox"/>	Dichloroethylene, trans-1,2	156-60-5	0.1	0.001	Y
<input type="checkbox"/>	Dichloropropane, 1,2-	78-87-5	0.005	0.001	Y
<input type="checkbox"/>	Dichloropropane, 1,3-	142-28-9	0.0091	0.001	Y
<input type="checkbox"/>	Dichloropropane, 2,2-	594-20-7	0.013	0.001	Y
<input type="checkbox"/>	Dichloropropene, 1,1-	563-58-6	0.0091	0.001	Y
<input type="checkbox"/>	Dichloropropene, cis 1,3-	10061-01-5	0.0017	0.001	Y
<input type="checkbox"/>	Dichloropropene, trans 1,3-	10061-02-6	0.0091	0.001	Y
<input checked="" type="checkbox"/>	Ethyl benzene	100-41-4	0.7	0.006	Y
<input type="checkbox"/>	Ethylene dibromide	106-93-4	0.00005	0.001	N
<input type="checkbox"/>	Hexachlorobutadiene	87-68-3	0.012	0.003	Y
<input type="checkbox"/>	Hexanone, 2-	591-78-6	0.12	0.015	Y
<input type="checkbox"/>	Methyl acetate	79-20-9	24	0.015	Y
<input type="checkbox"/>	Methyl cyclohexane	108-87-2	120	0.015	Y
<input type="checkbox"/>	Methyl ethyl ketone (2-Butanone)	78-93-3	15	0.015	Y

COC	Analyte	CAS No.	PST Action Level or TRRP Tier 1 ^{GW} GW _{Ing} PCL (mg/L)	Lab MQL (mg/L)	Is Lab MQL < LORP? (Y/N)
<input type="checkbox"/>	Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	2.0	0.015	Y
<input type="checkbox"/>	Methylene bromide	74-95-3	0.12	0.001	Y
<input type="checkbox"/>	Methylene chloride	75-09-2	0.005	0.0025	Y
<input checked="" type="checkbox"/>	MTBE (methyl tert-butyl ether)	1634-04-4	0.24	0.006	Y
<input type="checkbox"/>	Naphthalene	91-20-3	0.49	0.015	Y
<input type="checkbox"/>	Propylbenzene, n-	103-65-1	0.98	0.001	Y
<input type="checkbox"/>	Styrene	100-42-5	0.1	0.001	Y
<input type="checkbox"/>	Tetrachloroethane, 1,1,1,2-	630-20-6	0.035	0.001	Y
<input type="checkbox"/>	Tetrachloroethane, 1,1,2,2-	79-34-5	0.0046	0.001	Y
<input type="checkbox"/>	Tetrachloroethylene	127-18-4	0.005	0.002	Y
<input checked="" type="checkbox"/>	Toluene	108-88-3	1.0	0.006	Y
<input type="checkbox"/>	Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	730	0.015	Y
<input type="checkbox"/>	Trichlorobenzene, 1,2,3-	87-61-6	0.073	0.005	Y
<input type="checkbox"/>	Trichlorobenzene, 1,2,4-	120-82-1	0.07	0.005	Y
<input type="checkbox"/>	Trichloroethane, 1,1,1-	71-55-6	0.20	0.001	Y
<input type="checkbox"/>	Trichloroethane, 1,1,2-	79-00-5	0.005	0.001	Y
<input type="checkbox"/>	Trichloroethylene	79-01-6	0.005	0.001	Y
<input type="checkbox"/>	Trichlorofluoromethane	75-69-4	7.3	0.001	Y
<input type="checkbox"/>	Trichloropropane, 1,2,3-	96-18-4	0.00003	0.001	N
<input type="checkbox"/>	Trimethylbenzene, 1,2,4-	95-63-6	1.2	0.005	Y
<input type="checkbox"/>	Trimethylbenzene, 1,3,5-	108-67-8	1.2	0.005	Y
<input type="checkbox"/>	Vinyl chloride	75-01-4	0.002	0.001	Y
<input checked="" type="checkbox"/>	Xylenes, total	1333-20-7	10	0.006	Y

Table 4 Levels of Required Performance for PAHs in Aqueous Samples Analyzed By SW-846 Method 8270D-SIM

COC	Analyte	CAS No.	PST Action Levels Groundwater (mg/L)	Lab MQL (mg/L)	Is Lab MQL < LORP? (Y/N)
<input checked="" type="checkbox"/>	Acenaphthene	83-32-9	2.19	0.00005	Y
<input checked="" type="checkbox"/>	Acenaphthylene	208-96-8	2.19	0.00005	Y
<input checked="" type="checkbox"/>	Anthracene	120-12-7	11	0.00005	Y
<input checked="" type="checkbox"/>	Benz-a-anthracene	56-55-3	0.000117	0.00005	Y
<input checked="" type="checkbox"/>	Benzo-a-pyrene	50-32-8	0.0002	0.00005	Y
<input checked="" type="checkbox"/>	Benzo-b-fluoranthene	205-99-2	0.000117	0.00005	Y
<input checked="" type="checkbox"/>	Benzo-g,h,i-perylene	191-24-2	1.10	0.00005	Y
<input checked="" type="checkbox"/>	Benzo-k-fluoranthene	207-08-9	0.00117	0.00005	Y
<input checked="" type="checkbox"/>	Chrysene	218-01-9	0.0117	0.00005	Y
<input checked="" type="checkbox"/>	Dibenz-a,h-anthracene	53-70-3	0.0002	0.00005	Y
<input checked="" type="checkbox"/>	Dibenzofuran	132-64-9	0.146	0.00005	Y
<input checked="" type="checkbox"/>	Fluoranthene	206-44-0	1.46	0.00005	Y
<input checked="" type="checkbox"/>	Fluorene	86-73-7	1.46	0.00005	Y
<input checked="" type="checkbox"/>	Indeno-1,2,3-cd-pyrene	193-39-5	0.000117	0.00005	Y
<input checked="" type="checkbox"/>	Naphthalene	91-20-3	0.73	0.00005	Y
<input checked="" type="checkbox"/>	Phenanthrene	85-01-8	1.1	0.00005	Y
<input checked="" type="checkbox"/>	Pyrene	129-00-0	1.1	0.00005	Y

3.1.3 Data Review

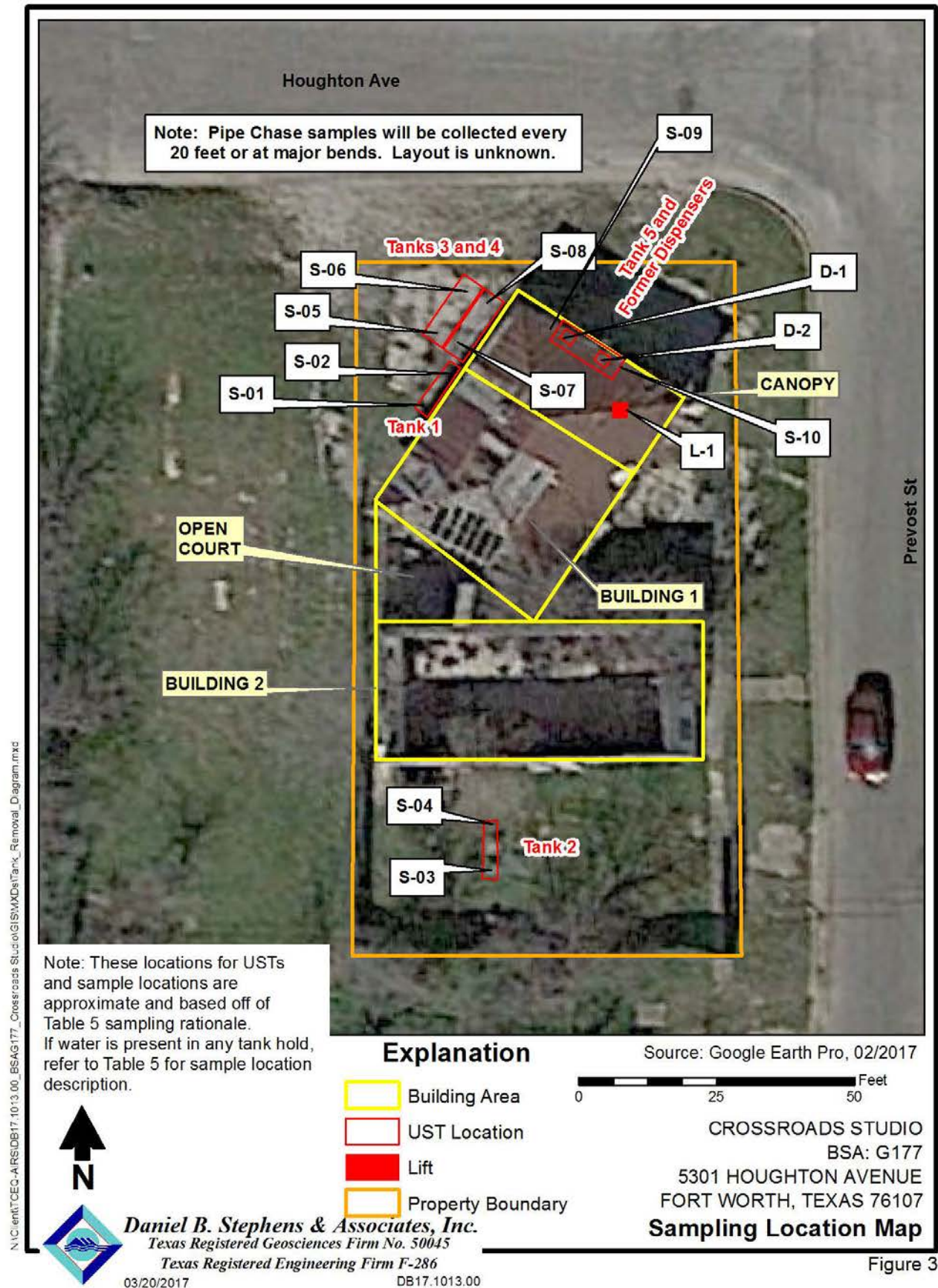
The laboratory will provide the Contractor with an electronic data deliverable (EDD) that contains all pertinent information per contract specifications.

The laboratory shall review the data as specified in QAPP Element D.1.1 and shall submit the data package as specified in QAPP Element A.9. The Contractor shall complete an independent data usability review as specified in QAPP Element D.1.2.

3.1.4 Data Review Memorandum

The Contractor shall prepare a data review summary as specified in the QAPP Element D.1.2 and will incorporate the data review summary into the RDR.

Figure 3 Sampling Location Map



4.0 Sampling Plan Design

The sampling design is judgmental, i.e. not statistical. Sample locations are selected to determine concentrations of the COCs in areas of known or suspected releases, in known or suspected migration pathways, and in known or suspected sources.

4.1 Sampling Locations and Rationale

The planned sample locations, as prescribed by the TCEQ regulatory guidance [RG-411 Investigating and Reporting Releases from Petroleum Storage Tanks](#), are indicated in Figure 3 (Sampling Location Map). The rationale for each sample location is presented in Table 5 (Sample Rationale, Locations, and Analysis). Because the sampling plan is based on judgment, all of the samples listed in Table 5 are critical by location.

It is unknown if the GPR anomaly discovered on the northeast side of the building represents a tank. The tank appears to be at a depth of approximately 2 feet. After excavating to a depth of 4 feet, if no tank is found, no samples will be collected.

4.1.1 Tank-hold

Locations for tank-hold samples depend upon the size (length) and number of tanks in the system, and whether bedrock, a concrete slab, or water is present.

If concrete slabs or “deadman” anchors are in the bottom of the tank-hold, the sampling into the native soil will be down at the edges of the slabs and anchors based on the number and lengths of tanks, to the extent possible.

Photographs of the excavated tank-hold bottom and walls will be included in the RDR to document the conditions encountered at the site.

4.1.1.1 Water Not Present in the Tank-hold

If water is not present in the tank-hold, grab samples of native soil will be collected from approximately one foot into the floor of the tank-hold. The number and location of floor samples depends on the number of tanks and the length of each tank based on:

- If a tank is less than or equal to 5 feet in length, one soil sample will be collected from beneath the fill port.
- If the tank is between 5 and 20 feet in length, one soil sample will be collected from beneath each end of each tank.
- If a tank is greater than 20 feet in length, a total of three (3) soil samples will be collected: one soil sample from beneath the fill port and one soil sample from each end of the tank; alternatively, if the fill port is within 3 feet of a tank end, one soil sample from beneath the middle distance between the ends of the tank and one soil sample from each end.

4.1.1.2 Water Present in the Tank-hold

If water is present in the tank-hold and covers the entire floor, grab samples of native soil will be collected from immediately above the soil-water interface, one foot into the sidewalls. The number of soil samples depends on the following:

- If a single tank is present and is less than or equal to 10 feet in length, two (2) soil samples will be collected immediately above the soil-water interface at the ends of each tank. A minimum of one water sample will be collected.
- If a single tank is present and is greater than 10 feet in length or if multiple tanks are present, four (4) soil samples will be collected from immediately above the soil-water interface on the four walls of the tank-hold. A minimum of one water sample will be collected.

If water is in the tank-hold and covers only a portion of the floor, the area covered by water will be sampled according to the specifications in this section, and the area not covered by water will be sampled according to the specifications in Section 4.1.1.1.

If preexisting tank-hold observation wells are present, groundwater samples can be collected instead of sampling water in the open excavation.

4.1.1.3 Bedrock

If bedrock is present in the tank-hold floor or walls, soil samples will first be attempted from the floor or walls, depending on the presence or absence of water.

If the bedrock is completely unweathered and samples cannot be collected, sample native soil from one foot into the sidewalls, immediately above the soil-bedrock interface. Include in the RDR the depth below ground surface from which samples were collected and describe the width, length, and approximate numbers of any bedrock fractures present.

4.1.1.4 Piping-trenches

All piping shall be located before sampling using as-built drawings, remote sensing, or excavation. Completely expose the piping, if possible, to better see where the joints, bends, and connectors are located. Discrete grab samples from native soil under the piping, approximately one foot below the trench bottom, shall be collected. The locations shall be in elbows (where the piping changes direction), connectors, and joints, and adjacent to any corrosion holes or other evidence of potential contamination.

At least one native soil sample per 20 feet of piping shall be collected. For any dispenser located over a tank with no remote fill port, a separate piping soil sample does not have to be taken. If a piping run contains more than one product line, or if lines are within 5 feet of each other, collect only one soil sample for every 20 linear feet of the piping group.

4.1.1.5 Dispensers

One sample from the supply side of each dispenser shall be collected, one foot into the native soil under the dispenser piping. For dispensers located within 5 feet of each other, only one soil sample, halfway between the two dispensers, needs to be collected. For dispensers located directly over a tank-hold, separate dispenser samples do not need to be collected.

4.1.1.6 Hydraulic Vehicle Lift

One grab sample will be collected approximately one foot into the native soil beneath any hydraulic vehicle lift discovered on-site during the course of the investigation.

4.1.1.7 Backfill

Sample excavated backfill at the rate of one discrete grab sample per 50 cubic yards of backfill.

Collect the grab samples from at least a one-foot depth into the backfill stockpile, in areas where appearance, smell or a field-instrument reading potentially indicates contamination. Backfill of all types (for example pea gravel, sand, fill dirt) will be characterized by sampling.

Table 5 Sample Rationale, Locations, and Analysis

Sample ID	Sample Location (and depth if applicable)	Sample Rationale (including associated field QC samples)	Analysis*
<i>Tank-hold Soil Samples - Water Not Present ^b</i>			
S-01 and S-02	<p>Depth 24"</p> <p>Samples are located at either end of the tank.</p> <p>Tank 1 is approximately 9 ft. long and is adjacent to the west side of Building 1.</p> <p>The MS/MSD sample will be selected from this sample location.</p>	<p>Samples of native soil will be collected from the bottom of the tank-hold under Tank 1 and analyzed to determine if COCs have been released from Tank 1.</p> <p>The number of samples collected will depend on the tank length and the depth below ground surface where samples were collected. The field logbook will accurately document the length of the tank. Section 4.1.1 and Section 4.1.1.1 detail required sampling activities.</p>	2,3 ^a ,6
S-03 through S-10	<p>Depth 24"</p> <p>Samples are located at either end of the tank.</p> <p>Tank 2 is 9 ft. long and located in the middle of the backyard in the southwestern portion of the Site.</p> <p>Tank 3 and Tank 4 are 13 ft. long and located directly west of the awning.</p> <p>Tank 5 is a possible fuel tank located below the pump island.</p>	<p>Samples of native soil will be collected from the bottom of tank-holds under Tank 2, Tank 3, Tank 4, and Tank 5 and analyzed to determine if COCs have been released from each tank.</p> <p>The number of samples collected will depend on the tank length and the depth below ground surface where samples were collected. The field logbook will accurately document the length of the tank. Section 4.1.1 and Section 4.1.1.1 detail required sampling activities.</p>	1,2,3 ^a
<i>Tank-hold Sidewall Soil Samples - Water Present ^b</i>			
SDW-01 and SDW-02	<p>Depth 24"</p> <p>Samples are located at either end of the tank.</p> <p>Tank 1 is approximately 9 ft. long and is adjacent to</p>	<p>Samples of native soil will be collected from each of the sidewalls of the tank-hold to determine if COCs have been released from Tank 1. Soil samples will be collected using a track hoe to excavate approximately one (1) foot into</p>	2,3 ^a ,6

	<p>the west side of Building 1.</p> <p>The MS/MSD sample will be selected from this sample location.</p>	<p>the sidewalls of the tank-hold immediately above the water level observed prior to removal of the tank.</p> <p>The field logbook will accurately document the length of the tank. Section 4.1.1 and Section 4.1.1.2 detail required sampling activities. Note in the RDR the depth below ground surface from which the sidewall samples were collected. If water is present over only a portion of the tank-hold floor, collect samples according to the required sampling procedures for "water present" and "water not present".</p>	
SDW-03 through SDW-16	<p>Depth 24"</p> <p>Samples are located immediately above the soil-water interface at the tank ends in the tank-holds containing Tank 2 and Tank 5 (if length of Tank 5 is less than or equal to 10 feet).</p> <p>Samples are located immediately above the soil-water interface at 4 walls of the tank-hold containing Tank 3, Tank 4 and Tank 5 (if length of Tank 5 is greater than 10 feet).</p> <p>Tank 2 is 9 ft. long and located in the middle of the backyard in the southwestern portion of the Site.</p> <p>Tank 3 and Tank 4 are 13 ft. long and located directly west of the awning.</p> <p>Tank 5 is a possible fuel tank located below the pump island.</p>	<p>Samples of native soil will be collected from each of the sidewalls of each tank-hold to determine if COCs have been released from each tank. Soil samples will be collected using a track hoe to excavate approximately one (1) foot into the sidewalls of the tank-hold immediately above the water level observed prior to removal of the tank.</p> <p>The field logbook will accurately document the length of the tank. Section 4.1.1 and Section 4.1.1.2 detail required sampling activities. Note in the RDR the depth below ground surface from which the sidewall samples were collected. If water is present over only a portion of the tank-hold floor, collect samples according to the required sampling procedures for "water present" and "water not present".</p>	1,2,3 ^a
Piping Trenches			

P-1 and P-2	Samples will be collected in the native soil directly beneath piping running from the tanks.	<p>Samples of native soil will be collected and analyzed to determine if a release of COCs from the piping has occurred in the piping trenches.</p> <p>The number of samples collected will depend on the length of the piping. The field logbook will accurately document the length of the piping removed. Section 4.1.1.4 details the field sampling requirements. A discrete grab soil sample will be collected one (1) foot into the native soils for every 20 linear feet of piping. Samples will be collected at any connector elbow or bend.</p>	1,2,3 ^a
Dispensers			
D-1 and D-2	Samples will be collected under any petroleum fuel dispenser pads discovered.	<p>Samples will be collected under dispenser locations to determine if a release of COCs from any dispensers has occurred.</p> <p>At each location, one (1) sample will be collected one (1) foot into the native soils beneath each fuel dispenser. The number of samples collected will depend upon the location of the dispenser. The Contractor will accurately document in field logbook the conditions at the Site. Section 4.1.1.5 details the field sampling requirements.</p>	1,2,3 ^a
Backfill			
B-01 through B-04	<p>Samples will be collected from the excavated backfill stored on-site during the tank removal process.</p> <p>One (1) discrete grab sample will be collected for each 50 cu yds of backfill.</p>	<p>Backfill soil samples will be collected to determine if the backfill contains COCs above the PST Action Levels.</p> <p>The number of samples collected will depend on the amount of backfill removed from the tank-holds. The Contractor will accurately document in field logbook the conditions at the Site. Section 4.1.1.7 details the field sampling requirements..</p>	1,2,3 ^a ,4 ^c

Hydraulic Vehicle Lifts			
L-1	Samples will be collected from beneath any hydraulic lift discovered.	<p>Samples of native soil will be collected from below excavated lifts by collecting a grab sample one (1) foot into native soil and analyzed to determine if COCs have been released from a hydraulic lift.</p> <p>The Contractor will accurately document in field logbook the conditions at the Site. Section 4.1.1.6 details the field sampling requirements.</p>	2,3 ^a
S-60 through S-X or SDW-60 through SDW-X	Field duplicates	Field duplicates of soil samples denoted in the field logbook.	1 or 6,2 ^a ,3
Water Samples			
W-01	<p>Tank 1 is approximately 9 ft. long and is adjacent to the west side of Building 1.</p> <p>The MS/MSD sample will be selected from this sample location.</p>	<p>Water sample will be collected from the tank-hold to determine if the water contains COCs above the PST Action Levels.</p> <p>One (1) discrete grab water sample will be collected if water is present in any part of the excavation (tank-hold, pipe chase, dispensers, etc).</p>	2,5 ^a ,6
W-02 through W-04	<p>Tank 2 is 9 ft. long and located in the middle of the backyard in the southwestern portion of the Site.</p> <p>Tank 3 and Tank 4 are 13 ft. long and located directly west of the awning.</p> <p>Tank 5 is a possible fuel tank below the pump island.</p>	<p>Water samples W-02 through W-04 will be collected from the tank-holds to determine if the water contains COCs above the PST Action Levels.</p> <p>One (1) discrete grab water sample will be collected if water is present in any part of the excavation (tank-hold, pipe chase, dispensers, etc).</p>	1,2,5 ^a
W-10	Field Duplicate	Field duplicates of water samples denoted in the field logbook.	1 or 6,2,5 ^a
Field QC Blank Samples			
TB-1	Trip Blank		1
FB-1	Field Blank		1

* Analytical methods are listed in Section 4.1.1.8 of this FSP.

^a TPH analysis is used only to screen for PAHs and is required for all initial release determination activities. No LPST ID number will be assigned based on TPH alone. If TPH is detected in the > nC12 hydrocarbon range, the soil and groundwater samples exhibiting the highest TPH concentration in the > nC12 hydrocarbon range will be analyzed for PAHs (one soil and groundwater sample per source area). If there is no detectable TPH in the >nC12 hydrocarbon range, no soil or groundwater samples will be analyzed for PAHs.

^b Any water present in the tank-hold must be sampled following the specifications in Section 4.1.1.2.

^c A synthetic precipitation leaching procedure (SPLP) Analysis will be run on the backfill sample exhibiting the highest concentration of the COCs listed in Section 2.3 of this FSP.

4.1.1.8 Sample Analysis

The method of analyses noted in Table 5 (Sample Rationale, Locations, and Analysis) for the samples are listed and described below.

1. BTEX/MTBE by EPA SW-846 Method 8260C.
2. TPH by TCEQ Method 1005.
3. PAHs in soil by EPA SW-846 Method 8270D.
4. SPLP by EPA SW-846 Methods 1312/8260C/8270D.
5. PAHs in water by EPA SW-846 Method 8270D-SIM.
6. VOCs by EPA SW-846 Method 8260C

4.2 Field Quality Control Samples

Applicable field QC samples listed in Table 6 (Frequency of Collection of Field Quality Control Samples) will be collected in accordance with TCEQ SOP No 6.5 (Quality Control Samples). This procedure is applicable to all media.

Table 6 Frequency of Collection of Field Quality Control Samples

Type of QC Sample	Frequency of Collection
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One per 20 project samples of each matrix.
Field Blank (FB)	1 per day per 20 samples of each matrix when analyzing for VOCs or other suspected airborne particles. Collect the field blank at a sample location before the sample is collected.

Type of QC Sample	Frequency of Collection
Equipment Rinsate Blank (ER)	One at the end of each day for each matrix is required when non-dedicated sampling equipment is used.
Trip Blank (TB)	One for each cooler containing VOC samples. The sample vials will be filled with ASTM Type II reagent grade water before sample containers are transported to the field. If the containers are coming from the laboratory, the trip blanks will be prepared by the laboratory.
Field Duplicates (FD)	One per day per approximately 10 project samples of each matrix. Collect the field duplicate immediately after the sample is collected.
Temperature Blank	One per cooler.

4.3 Sampling Methods and Sample Handling

4.3.1 Field Sampling Procedures

All samples will be collected in accordance with the QAPP, this FSP and the TCEQ SOPs listed in this FSP. All field activities, measurements, and field observations will be recorded in the field logbook. Sections 4.3.1.1.1 through 4.3.1.1.3 describe additional sampling procedures required for this sampling event.

Samples for VOC analysis will be collected first, in accordance with TCEQ SOP No. 6.3 (Volatile Organic Compound (VOC) Samples).

After the VOC samples are collected, the samples for TPH and for PAHs are then collected in that order. See Section 4.3.2 in this FSP regarding special custody procedures VOC sample vials.

The GPS location information will be taken and recorded for all sampled points during the sample event as specified in Section 5.2 of this FSP. The GPS data will be recorded in the field logbook.

4.3.1.1 Sample Collection

The Contractor will be accompanied by TCEQ staff during the entire sampling event as budget and schedules allow. Field sampling personnel will wear non-lubricated nitrile disposable gloves, or other suitable disposable gloves, during the handling of all sampling equipment and during sampling. The gloves will be changed between each sample location. Prior to sampling activities, non-dedicated sampling equipment shall be decontaminated pursuant to Section 5.3 of this FSP.

4.3.1.1.1 Soil Samples

Discrete grab samples of soil will be collected during this sampling event. No composite soil samples will be collected. Soil samples will be collected at locations where contamination is most likely present. Preference will be given to collecting samples of soil in areas where:

- Obvious visual, olfactory, or field instrument indications denote contamination is present; and
- The tank or piping material may have failed (leaked), such as at corrosion holes or cracks.

Samples collected for release determination will be collected as soon as possible after the soil is exposed to the atmosphere.

If a backhoe or similar equipment is used to collect soil samples in a tank-hold during a tank removal, samples of native soil will be immediately collected at one foot into the freshly excavated relatively unexposed soil in the trackhoe (backhoe) bucket from the appropriate locations. Native soil samples from beneath the dispensers and along pipe chases and excavated backfill stockpile samples will be collected directly from the exposed soils using the same tools. All soil samples will be placed in appropriate laboratory-supplied containers for the requested analyses.

Backfill to be disposed off-site must also be characterized according to the requirements of the disposal facility permit. Meeting these requirements is dependent on the Contractor and the waste receiving facility. However, after disposal is complete, the Contractor will include the waste manifest signed by the receiving facility in the RDR.

Backfill removed from the tank-hold or other parts of the tank system must be piled on plastic sheeting (6 mm polyethylene is recommended) while the backfill samples are being analyzed or while waiting for off-site disposal. If the backfill will remain on-site for longer than 24 hours, or if precipitation is likely, the backfill stockpiles will be covered with the plastic sheeting and anchored securely in place until the backfill is either returned to the excavation or disposed of off-site.

Backfill may be returned to the tank-hold if concentrations are below PST action levels. Contaminated backfill may be returned to the tank-hold if: (1) no open exposure pathway exists; and (2) SPLP testing shows that contamination from soil remaining in place is not likely to leach unacceptably into groundwater in the future. Whether exposure pathways are open can often be determined by evaluating site features, such as surface cover and utility locations. Therefore, a full 500-foot receptor survey generally is not required. If conditions (1) and (2) above are not satisfied, contaminated backfill should be disposed of off-site, unless the native soil or groundwater is affected and the release determination results in the issuance of an LPST number for the site. In that situation, contaminated backfill returned to the tank-hold will be considered in the site assessment and can be addressed during remediation.

Dedicated sampling equipment will normally be used. All soil sampling activities will be entered in the logbook.

4.3.1.1.2 *Samples Collected in Tank-holds for Volatile Analysis*

Samples collected for VOC analysis from tank-hold excavations in native soil will be sampled for VOCs at the appropriate location by collecting freshly excavated soil in the trackhoe (backhoe) bucket using SW-846 EPA Method 5035A sampling procedures. The TCEQ guidance for implementing the SW-846 Method 5035A procedures will be followed.

4.3.1.1.3 *Water Samples*

Discrete grab water samples will be collected in the tank-hold where water is present in the tank-hold. If water is present in the tank-hold, a representative sample will be collected as soon as possible after it is exposed to the atmosphere. The sample will be analyzed for the appropriate target COCs. The water sample will be collected using a new disposable polyethylene bailer. All water samples will be placed in appropriate laboratory-supplied containers for the requested analyses.

4.3.2 Chain-of-Custody Procedures

Sample handling and custody will be conducted in accordance with TCEQ SOP No. 6.4 (Sample Handling and Control), QAPP Element B.3, and the information in this section. When the sample is introduced into the sample container, the lid or cap shall be tightened onto the container, and a custody seal shall be immediately wrapped around the lid or cap of the sampling container with the following exception:

VOA sample vials from the same water sample location will be filled, capped tightly, wrapped in protective wrapping to avoid breakage, and bagged together in a recloseable storage bag, e.g., a disposable plastic bag with a zipper-type closure. The bag will then be closed and a custody seal placed across the closure.

Each transport shuttle containing samples will be sealed with two custody seals bearing the printed site name and date, and the signature of the person maintaining custody of the samples. The seals should be placed perpendicular to the opening of the shuttle. After the custody seals are in place, packing tape should be wrapped over them and around the circumference of the shuttle.

The custody seals shall not be broken until received by the laboratory. Custody documentation will be maintained using a chain-of-custody form that lists each sample and the individuals performing the sample collection, shipment, and receipt. A sample is considered in custody if the samples are:

- In the actual possession of a member of the sampling team;
- In the view of a member of the sampling team, after being in physical possession;
- Locked so that no one can tamper with the samples, after having been in physical possession, or;
- In a secured area, restricted to authorized personnel.

The field sampling team will use the custody records to document the collection, shipping, and delivery of the samples to the laboratory. The individual who has custody of the sample(s) in their possession will sign the custody form relinquishing custody to the laboratory. The laboratory will immediately contact the Contractor PM if the chain-of-custody is not complete for samples received by the laboratory. The laboratory will keep the original custody record in the project files at the laboratory and send a copy of the completed record in the data packages issued to the Contractor.

The chain-of-custody form will include the following:

- The unique identification number of each sample;
- The time and date of collection of each sample;
- The number and type of containers of each sample;
- The matrix of each sample;
- The methods of preservation of each sample;
- The analytical methods to be used by the laboratory for each sample;
- The sample(s) designated for the MS/MSD QC analyses;
- A note identifying samples suspected of containing high concentrations of chemicals;
- If a courier or common carrier is used to transport the sample cooler to the laboratory, the custody record will include the air bill number, the time and date the cooler is sealed, and the signature of the field personnel relinquishing custody to the courier or common carrier
- The time and date the laboratory accepts custody of the samples and the signature of the laboratory personnel accepting that custody; and
- The temperature of the temperature blank measured by the laboratory upon receipt.

4.3.3 Sample Identification and Documentation of Sampling Activities

Information regarding sample collection will be entered into the field logbook pursuant to TCEQ SOP No. 6.1 (Documentation and Reporting). The following information will be recorded in the TCEQ field logbook:

- Date and time of sample collection;
- Environmental matrix and sample type (e.g., soil composite or groundwater grab);
- Sample collection method;
- Sample preservation;
- Name of the person who collected the sample;
- Sample identification number and depth measured from surface of the environmental medium sampled;
- Sample(s) designated for the MS/MSD QC analyses;

- Field measurements made on the sample during and at the time of collection, e.g., photoionization readings using a photoionization detector (PID);
- When low-flow technology used, the flow rate, e.g., mL/min, as sample was collected;
- GPS file number;
- Photograph number;
- Date and time of photograph with a description of the purpose of the photograph, e.g. “This photo documents the sample collected at location X of material released to soil from the corroded and leaking drums in the drum storage area observed and documented in photos 2 & 3.”;
- Name of the person who took the photograph and direction the person was facing when the photograph was taken;
- Relevant observations such as soil color, obvious staining, and weather conditions; and
- Deviations from the QAPP, FSP, or SOPs, with the justification or rationale for each deviation documented.

Samples will be adequately marked for identification from the time of collection and packaging through shipping and storage. The sample identification scheme will include:

- Field sample ID;
- Project name and number;
- Sampling date and time;
- Name of the sample collector;
- Method of sample preservation; and
- Laboratory analyses required.

Sample identification will be as follows:

- **Water Samples:** Water samples will be identified using the prefix “W-” followed by a sequential number;
- **Soil Samples:** Surface and subsurface soil samples will be identified using the prefix “S-” followed by a sequential number;
- **Tank-hold Sidewall Soil Samples:** Soil samples collected from the tank-hold sidewalls will be identified using the prefix “SDW-” followed by a sequential number;
- **Geotechnical Soil Samples:** Geotechnical soil samples will be identified using the prefix “GT-” followed by a sequential number;
- **Piping Trench Soil Samples:** Soil samples collected within the piping trench will be identified using the prefix “P-” followed by a sequential number;

- **Dispenser Soil Samples:** Soil samples collected from beneath the former dispensers will be identified using the prefix “D-” followed by a sequential number;
- **Hydraulic Vehicle Lift Soil Samples:** Soil samples collected below any excavated hydraulic lift will be identified using the prefix “L-” followed by a sequential number;
- **Backfill Soil Samples:** Soil samples collected from the tank-hold backfill pile will be identified using the prefix “B-” followed by a sequential number;
- **Field Duplicate Samples:** The identification of field duplicate samples will not include any information the laboratory can use to identify the primary samples. Field duplicate samples will have a sample number randomly selected by the Contractor. The primary samples and associated field duplicate samples will be identified in the Contractor field notes. The field duplicate sample collection time will be a random time after the collection time of the primary sample. For example, sample GW-76 has a 14:30 collection time on the custody form; the field duplicate is Sample GW-15 that has a collection time of 15:05 custody form. The Contractor will record in the field logbook the actual collection time of the ID of the primary sample and the field duplicate sample and will identify the primary and duplicate sample pair, e.g., GW-76/-15;
- **Field Blanks:** Field Blanks will be identified using the prefix “FB-” followed by a sequential number;
- **Trip Blanks:** Trip Blanks will be identified using the prefix “TB-” followed by a sequential number.

At each sampling location, the collection of the sample will be documented by photographing the sample collection point and, if requested by the TCEQ, by recording the location with certified GPS equipment operated by GPS certified TCEQ staff or contractor personnel. If certified GPS equipment is not available, the sample locations will be identified and the method of identification and site sketch will be included in the field logbook.

Soil and water samples for use in demonstrating regulatory compliance will be received by the laboratory within two days of sample collection unless the Contractor obtains a waiver in writing from the TCEQ.

5.0 Additional Field Activities

5.1 Property Access

Access agreements between landowners and TCEQ have been obtained prior to initiation of sample collection activities. Copies of the access agreements will be placed in the project file.

5.2 GPS Information

The contractor will record the GPS location of the site, and sampling locations and other pertinent site features as requested by the TCEQ. The contractor will submit all GPS information to the TCEQ as specified in the WO. The GPS data shall be collected pursuant to TCEQ SOP No. 17.1 (GPS Data Collection and Submission).

5.3 Equipment Decontamination

Non-dedicated sampling equipment will be decontaminated prior to use and between each sampling location in accordance with QAPP Element B.2.2. A decontamination event will be performed at the end of every day, and an equipment blank sample will be collected as specified in Table 6. The TCEQ PM may modify the decontamination frequency if necessary. When non-dedicated sampling equipment is used, the Contractor will decontaminate the equipment using standard procedures that include the following steps:

- Brush or wipe the equipment down to remove visible material.
- Thoroughly rinse equipment with potable tap water.
- Clean the equipment with a brush in a solution of laboratory-grade detergent, e.g., Liquinox, Alconox, or equivalent, and potable water.
- Rinse well with tap water, and then rinse three times with distilled or deionized water.
- Place on clean plastic sheeting and air dry.
- If immediate use is not expected, place in a resealable plastic bag and seal the bag with a custody seal.

5.4 Investigation Derived Waste

All investigation derived waste (IDW) will be handled in accordance with TCEQ SOP No. 1.4 (Investigation-Derived Waste). The contractor will be responsible for collection, containerization, and disposal of all IDW.

Petroleum-contaminated waste may not be transported from the generating site unless the waste has been characterized and a waste manifest is initiated. Samples collected to characterize the waste should be analyzed for the major components of petroleum, including BTEX, TPH, and any other contaminants indicated by specific conditions at the generating site. A TCEQ petroleum-substance waste manifest is initiated by the generator and is to include the information indicated on the back of the form. The waste manifest used to transport petroleum contaminated material must conform to applicable statutes and requirements.

Purge waters from wells will be managed according to guidance provided in TCEQ SOP No. 1.4 (Investigation-Derived Waste) and "Management of Investigation-Derived Wastes during Site Inspections", EPA/540/G-91/009, May 1991. The preference is to leave both RCRA hazardous and non-hazardous IDW on-site whenever it complies

with regulations and does not pose any immediate threat to human health and the environment.

5.5 Physical Removal of Underground Storage Tanks

The Contractor, or subcontractor, removing an underground storage tank (UST) will be registered with the TCEQ and will have a Class B license.

Prior to removal of a UST, the following should be done:

- All underground and above ground utilities will be located.
- Any pavement over the USTs must be removed.
- Soil and backfill down to the top of the UST will be removed.
- The canopy will not be removed for this investigation.
- Enough plastic sheeting (6 mm polyethylene) to be placed both under and over any excavated soil or backfill will be assembled. This is to prevent the movement of contamination into underlying soil or groundwater, into the air as vapor, or off-site.
- Determination whether groundwater or bedrock will be encountered and planned for accordingly.

5.5.1 Tank Preparation

All regulated substances and accumulated sludges or residues from the tank, piping, and ancillary equipment will be removed. Vent lines shall be left in place. Product, sludges residues, and wash water may be classified as hazardous waste. Therefore, proper disposal of any of these substances must comply with the TCEQ and any federal regulations. Purge the tank of all flammable vapors. Local fire or building codes may require verification by local authorities of proper purging before work proceeds. Once the tank has been completely purged of all flammable vapors, all holes and openings must be properly plugged or capped. One vent hole with a 1/8 inch diameter must be left open at the top of the tank. All connected piping and other ancillary equipment must be emptied, disconnected, and properly plugged, capped, or removed prior to removing the tank.

5.5.2 Tank Removal

Physically remove the tank from the ground. After removal, a tank must be transported from the site within 24 hours, unless prior approval of a longer on-site storage period has been obtained from the appropriate TCEQ regional office.

Store tanks on-site for 24 hours or less in a designated area. The tanks should be stored an adequate distance from known ignition sources and clearly identified with appropriate barriers and warning signs to restrict access by unauthorized people.

On-site storage of removed tanks for more than 24 hours, and off-site storage for any period of time, is allowed only in locked, securely fenced, or similarly restricted areas where unauthorized people will not have access. Open excavation pits will be blocked off from public access by the use of temporary fencing.

No later than 24 hours after removal, all removed tanks (regardless of condition) must be legibly and presently labeled (in letters at least 2 inches high) with the following information:

- The former contents (e.g. gasoline);
- A flammability warning, if applicable;
- A warning that the tank is unsuitable for the storage of human or animal drinking water or food products; and
- Residual vapor levels in any removed tank must be maintained at nonexplosive and non-ignitable levels at all times.

5.6 Site Restoration

The work site and sampling locations will be restored to their original condition in accordance with TCEQ SOP No. 1.3 (Site Restoration). Efforts will be made to minimize impacts to work sites and sampling locations, particularly residential properties and those properties in or near sensitive environments.

5.7 Health and Safety

The contractor will develop a site-specific HASP to meet the project objectives. During all sampling activities, all field personnel will adhere to the HASP to ensure that all sample collection and decontamination are done in a safe manner. The purpose of this HASP is to assign responsibilities, establish personnel protection standards, specify safe operating procedures, and provide for contingencies that may arise while conducting this investigation. TCEQ personnel will adhere to the HASP while on site.

Prior to commencement of field activities, the contractor designated health and safety officer (H&SO) will conduct a safety briefing to inform all personnel of the possible chemical and physical hazards. All personnel will be required to read and sign the HASP, and the HASP will be readily available in the field at all times. The H&SO will conduct a daily safety meeting prior to initiating fieldwork each day to advise workers of ongoing and new health and safety concerns. During the daily safety meeting, the H&SO will identify all potential health and safety risks present at the Site. The H&SO will record the subjects covered during each daily safety briefing, as well as personnel in attendance. These records will become part of the project files. The H&SO will verify all field personnel have completed “OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120)” training before beginning fieldwork and will verify at least one on-site worker has training in first aid and CPR.

The H&SO will clearly designate the area where personnel can eat, drink, or smoke. Outside of that designated area, all personnel will minimize hand to mouth contact.

5.8 Deviations, Modifications, and/or Departures from this Approved FSP or QAPP

Each deviation, modification, and/or departure from this approved FSP or QAPP must be approved by the TCEQ PM and/or TCEQ Project QA Specialist and recorded in the field logbook with a discussion of the rationale for each deviation. Significant modifications to the approved FSP or QAPP will be approved by the EPA Project Officer. Any deviations and or modifications will be recorded, with a discussion of the rationale for each, in the field logbook and will be documented in the findings of the Release Determination Report.

6.0 Exceptions, Additions, and Changes to the TCEQ Petroleum Storage Tank Lead Program QAPP

There are no exceptions, additions, and/or changes to the *FY 2017 Petroleum Storage Tank State Lead Program QAPP (Revision 0.0, Q-TRAK# 16-388)* proposed by the Brownfields program for this project.

6.1 Project-Specific Laboratory Changes to Group A.0 (Project Management) and Group B.0 (Data Generation and Acquisition)

Proposed changes to the *FY 2017 TCEQ Petroleum Storage Tank State Lead Program QAPP (Revision 0.0, Q-TRAK# 16-388)* are presented below. The changes are listed by method and reference the specific elements and tables of the QAPP.

6.1.1 Method Detection Limits

Element A.7 tables entitled “Calibration and QC Acceptance Criteria” specify that a method detection limit (MDL) study be performed “Once per 12 month period”. The following phrase will be added: “or perform detectability check standards (DCSs) on a quarterly basis throughout the year to verify the MDL”. In addition, the acceptance criteria in these tables will be changed from “Detection limits shall be < 1/2 the MQLs in Table X” to “Detection limits shall be < 1/2 the MQLs listed in Table X unless discussed in Section 6 of the project FSP.”

6.1.2 Volatile Organic Compounds by EPA SW-846 Method 8260C

1. MQLs. Laboratory MQLs are to be used for this project. The laboratory MQLs for the COCs are below the PST Action Levels for soil and groundwater as demonstrated in Tables 1 and 3. The laboratory MQLs for some listed compounds as noted in the tables exceed the PST Action Levels or TRRP Tier 1 PCLs but are below the TCEQ QAPP-required MQLs (with the exception of ethylene dibromide) and are not known COCs for this site.

2. Analyte List. DHL is National Environmental Laboratory Accreditation Program (NELAP)-accredited under the Texas Laboratory Accreditation Program (TLAP) for EPA SW-846 Method 8260. However, DHL is not accredited for cyclohexane. Since the TLAP does not currently offer accreditation for this SW-846 Method 8260 compound, the cyclohexane data are exempt from accreditation under 30 TAC §25.6.

6.1.3 Polynuclear Aromatic Hydrocarbons by EPA SW-846 Method 8270D

1. MQLs. Laboratory MQLs are to be used for this project. The laboratory MQLs for the COCs are below the PST Action Levels for soil and groundwater as demonstrated in Tables 2 and 4.
2. DHL Analytical is NELAP accredited under the TLAP for EPA SW-846 Method 8270. However, DHL is not accredited for benzaldehyde. Since the TLAP does not currently offer accreditation for this SW-846 Method 8270 compound, the benzaldehyde data are exempt from accreditation under 30 TAC §25.6.

6.1.4 Polynuclear Aromatic Hydrocarbons by EPA SW-846 Method 8270D-SIM

For this analysis, DHL Analytical will utilize a SIM program to improve the sensitivity and the detection limit for the target compounds in aqueous sample matrices. The control limits specified for SW-846 Method 8270D in the QAPP will be followed with one exception: two surrogates (2-fluorobiphenyl and 4-Terphenyl-d14) are used rather than the 6 surrogates used for a full scan SW-846 Method 8270D analysis.

Appendix A : Data Quality Objectives

Step	Activity
Scope of study	The scope of this study is the investigation of the Crossroads Studios Property (Site).
State the problem	<p>The Phase I ESA dated February 17, 2017 identified three RECs as follows:</p> <ol style="list-style-type: none"> 1. The 2-1000 gallon USTs and potentially 3 additional USTs. These tank likely held gasoline or diesel, propane, and waste oil. 2. The presence of a hydraulic lift remnant at the Site could be an indicator of a potential past spill area and hence represents a recognized environmental condition. 3. Circle Q is located at 3417 Horne Street in Fort Worth, Texas and represents a recognized environmental condition since this property is located at a higher elevation and up gradient from the Site with respect to groundwater flow and a release at the Circle Q property has caused groundwater to be affected. <p>This field event will only address the following recognized environmental conditions:</p> <ol style="list-style-type: none"> 1. The USTs and propane tank 2. Hydraulic lift remnants <p>The environmental media of concern are soil and groundwater. For setting investigation levels, the current land use is commercial/industrial and the anticipated future land use is commercial/industrial.</p>
Goals of the study	<p>The goals of the study are:</p> <ol style="list-style-type: none"> 1. Determine if petroleum related chemical concentrations in the surface soils, subsurface soils, and groundwater in the study area are a risk to receptors.
Information inputs	<p>Soil samples will be collected and analyzed for VOCs or BTEX/MTBE, and TPH. Soil will be screened with a PID in the field. If the PID reading indicates the presence of organic contamination, the soil samples will be analyzed for VOCs or BTEX/MTBE, and TPH. If sample analysis indicates TPH is present in the >C12-C35 hydrocarbon range, the soil sample with the highest concentration of TPH in the >C12-C35 range will be analyzed for PAHs. If water is encountered in the tank-hold, samples will be collected and analyzed for VOCs and TPH. If sample analysis indicates TPH is present in the >C12-C35 hydrocarbon range, the water sample with the highest concentration of TPH in the >C12-C35 range will be analyzed for PAHs. The SW-846 analytical methods are:</p> <ul style="list-style-type: none"> • VOCs: 8260 • TPH: TCEQ 1005 • PAHs: 8270 (soil)/8270-SIM (water)
Study boundaries	The horizontal boundaries of the area within the Site are presented in Figure 3 (Sampling Location Map). The vertical boundary is 25 feet bgs. The temporal boundary is the duration of the field event and associated project reporting.
Decision criteria	<ul style="list-style-type: none"> • If the COC concentrations in groundwater are above the PST action levels, a drinking water survey report will be conducted. • If COCs concentrations are detected in soil and/or groundwater, the COC concentrations will be compared to the lowest applicable Plan A Target Concentrations. If sample concentrations are below the applicable levels, the site will be granted a no further action letter. • If COC concentrations are detected in soil and/or groundwater above Plan A Target Concentrations, further evaluation will be needed.
Specify performance or	The method performance and acceptance criteria are defined in the QAPP. The precision criterion for evaluating field duplicate results is given in Element B.5 of the TCEQ PST Program QAPP. The completeness goal for this sampling event is 90% for soil and water

Step	Activity
acceptance criteria	samples. The field QC samples collected (with the frequency parenthetically noted) will include field blanks (5%), field duplicates (10%), trip blanks (one in each cooler containing samples for VOCs analysis), and MS/MSDs (5%).(as specified in the PST Program QAPP and FSP).
Plan	Soil samples and tank-hold water samples will be located and collected according to TCEQ Regulatory Guidance (RG)-411.

Appendix B: TCEQ Standard Operating Procedures



STANDARD OPERATING PROCEDURE NO. 1.2 PREPARATION AND CONTROL

SOP#: 1.2
DATE: 4/25/2001
REVISION #: 0
PAGE 1 of 2

1.0 METHOD SUMMARY

This standard operating procedure (SOP) provides guidance for site preparation and control. It is intended to assist field personnel in preparing the site before conducting any work activities.

2.0 EQUIPMENT/APPARATUS/REAGENTS

2.1 Equipment List

- Appropriate personal protective equipment (PPE)
- Caution tape, orange cones and/or other visible means of delineating boundaries
- Heavy gauge plastic sheeting
- Collection systems for decontamination areas (e.g., sump pump)
- 55-gallon drums or other appropriate containers
- Sheets of plywood
- Hay bales
- 2 x 4 lumber
- Landscape timbers
- Tables or sawhorse benches
- Site Plan

3.0 PROCEDURES

1. Don appropriate PPE.
2. Identify and mark utility locations in accordance with SOP 2.4
3. Designate and mark the decontamination zone with caution tape, orange cones and/or other visible means. To control access of personnel and equipment to possible contaminants, the site will be divided into work zones. There is only one entrance and exit to the zones. Three categories of zones and one command post are utilized. For all operations except Level D, work zones will be designated as follows:
 - a. Support Zone or Clean Zone -- Along with the command post, this is the outermost boundary of the site. Contamination of personnel and equipment in this area is unlikely.
 - b. Contamination Reduction Zone -- This area serves as a corridor between the exclusion zone and the support zone and is the area where decontamination activities occur. All personnel and equipment passing through this corridor from the exclusion zone to the support zone must undergo appropriate decontamination.
 - c. Exclusion Zone -- This is the area where actual operations are being conducted. Access to this area is limited to personnel and equipment being utilized at that particular time for the specific operation in progress. The risk of contamination in this area is high.
4. Create a central decontamination area for drilling rigs and other large equipment (see SOP 1.5). The decontamination area should be large enough to allow storage of cleaned equipment and materials prior to use, as well as drums of decontamination waste. The decontamination area shall be lined with heavy gauge plastic sheeting, and designed with a collection system to capture decontamination waters. Solid wastes shall be accumulated in 55-gallon drums or other appropriate containers and stored in a designated investigative derived waste (IDW) storage area (see SOP 1.4).
 - a. A large equipment decontamination pad can be constructed by placing sheets of plywood on the ground and covering them with plastic sheeting. Walls for controlling over spray can be

**STANDARD OPERATING PROCEDURE NO. 1.2
PREPARATION AND CONTROL**

SOP#: 1.2
DATE: 4/25/2001
REVISION #: 0
PAGE 2 of 2

created from hay bales or by constructing 2 x 4 frames covered with plastic sheeting. Landscape timbers can be used to create berms around the floor of the decontamination pad. A sump pump should be used to collect decontamination water and transfer the water to 55-gallon drums.

- b. A small equipment decontamination line can be created by placing plastic sheeting on the ground and using tables or sawhorse benches to hold wash basins.
 - c. Decontamination lines are site specific since they are dependent upon the types of contamination and the type of work activity onsite. It is usually a location in a shaded area in which the wind can help to cool personnel.
5. Identify the locations of utilities, the field office/laboratory, IDW storage areas, exclusion zone, contamination reduction zone (including decontamination facilities), and the clean zone on a site plan.

4.0 CAUTIONS AND INTERFERENCES

This section is not applicable to this SOP.



**STANDARD OPERATING PROCEDURE NO. 1.3
SITE RESTORATION**

SOP#: 1.3
DATE: 4/25/2001
REVISION #: 0
PAGE 1 of 1

1.0 METHOD SUMMARY

This standard operation procedure (SOP) describes the steps necessary for site restoration. Upon completion of field activities, the site should be repaired to its original condition when possible. All drums or waste containers should be staged in a designated staging area and all other waste should be removed. All borings should be backfilled.

2.0 EQUIPMENT/APPARATUS/REAGENTS

Varies depending on which of the following tasks are completed.

3.0 PROCEDURES

1. Minimize impacts to work sites and sampling locations, particularly those in or near sensitive environments, such as wetlands with the use of soil erosion fences or by diverting streams/brooks during work operations.
2. Fill boreholes and pits, re-vegetate or erect erosion fences as necessary, re-establish streams, brooks, etc, as applicable.
3. Remove all sampling, decontamination equipment, and other items introduced to the site upon completion of work.
4. Remove all drums, trash, and other waste upon completion of work at the site.
5. Transport decontamination and/or purge water and soil cuttings to the designated locations.

4.0 CAUTIONS AND INTERFERENCES

This section is not applicable to this SOP.



STANDARD OPERATING PROCEDURE NO. 1.4 INVESTIGATION-DERIVED WASTE

SOP#: 1.4
DATE: 8/28/2013
REVISION #: 1
PAGE 1 of 2

1.0 METHOD SUMMARY

This standard operating procedure (SOP) describes procedures for managing investigation-derived waste (IDW) generated during field activities. IDW should be classified and disposed of in accordance with applicable laws and regulations. **It is the goal of the Superfund Program to properly dispose of all IDW in the fiscal year in which it was generated.** IDW should be properly disposed based on waste classification results. IDW may include, but is not limited to:

- **Environmental media IDW** such as soil cuttings from drilling or hand augering, ground water obtained through well development or well purging, and excess sample material;
- **Personnel protective equipment (PPE)** such as disposable coveralls, gloves, booties, and respirator canisters;
- **Disposable equipment** such as plastic tarps and equipment covers, aluminum foil, PVC pipe, disposable bailers, rope, twine, plastic tubing, broken or unused sample containers, and tape;
- **Trash** such as boxes, packing and shipping materials, and paper;
- **Drilling mud and drilling water;** and
- **Purge and Decontamination waters.**

The IDW will be segregated at the Site according to matrix (solid or liquid) and how it was derived (drill cuttings, drilling fluid, decontamination fluids, or purged groundwater). Each container will be properly labeled with site identification, sampling point, matrix, target chemicals of concern, and other pertinent information for handling. Although most of these materials are non-hazardous, occasionally IDW which meets the definition of hazardous waste may be generated. To the extent possible, non-hazardous waste should be segregated from hazardous waste.

2.0 EQUIPMENT/APPARATUS/REAGENTS

2.1 Equipment List

- U.S. Department of Transportation (DOT)-approved containers (e.g., 55-gallon drums, roll-off bins)
- Wrenches for securing drum lids
- Labels and/or paint or pens capable of withstanding outdoor environments for a number of years
- Lumber (for staging area construction)
- Plastic sheeting (for staging area construction)
- Plywood (for staging area construction)
- 5-gallon buckets
- Manifests
- Container log

3.0 PROCEDURES

Segregate the IDW according to matrix (e.g., solid, liquid, sludge), origin, and likely disposal classification (non-hazardous versus hazardous). Classify IDW based on waste classification results.



**STANDARD OPERATING PROCEDURE NO. 1.4
INVESTIGATION-DERIVED WASTE**

SOP#: 1.4
DATE: 8/28/2013
REVISION #: 1
PAGE 2 of 2

If practical, reduce the volume of IDW by compaction. Regularly collect IDW, litter, and garbage to maintain the cleanliness and orderliness of the Site. All IDW should be properly containerized, labeled, staged, and disposed of.

3.1 Non-Hazardous IDW

GENERAL PROCEDURES

The following general procedures apply to non-hazardous IDW that must be containerized, sampled, and/or must remain on-site for a period of time.

1. Keep non-hazardous IDW segregated from IDW that may meet the definition of hazardous waste.
 2. Keep obviously-contaminated IDW (e.g., oily soil cuttings) segregated from apparently non-contaminated IDW.
 3. Place IDW in appropriate containers (e.g., U.S. DOT 55-gallon drums, roll-off bins, trash bags, etc.)
 4. To the extent practical, containerize IDW from different locations separately to facilitate proper classification and disposal. Drill cuttings from different boreholes can be put in the same drums provided they originate from similar areas of the site (e.g., up-gradient, background borings, etc.).
 5. Transport containers to the staging area in a manner to prevent spillage or evaporative loss.
 6. Store containers in an appropriate staging area.
 7. Label each container with site identification, date of accumulation, description and source of the materials, contact information, and other pertinent information.
 8. Record the sample numbers which will be used to classify each container in the field logbook.
 9. Collect classification samples (if appropriate) from the IDW.
 10. Analyze samples for appropriate Target Chemicals of Concern (Target COCs).
 11. Review classification sample results.
 12. Classify the IDW for disposal.
 13. Prepare transport documentation as needed.
 14. Transport IDW to appropriate disposal facility.
-



**STANDARD OPERATING PROCEDURE NO. 1.4
INVESTIGATION-DERIVED WASTE**

SOP#: 1.4
DATE: 8/28/2013
REVISION #: 1
PAGE 3 of 2

15. If the IDW was generated at an active facility, consider obtaining permission from the operator of the facility to place non-hazardous IDW in facility dumpsters, if available.
16. On larger projects, waste hauling services may be obtained and a dumpster located at the site.
17. Include the completed log of IDW information and labeling and a rough sketch of the IDW locations with the identifiers of each container in the field logbook.
18. Maintain a log (Appendix A) of all containers, stating their identification number and contents.
19. Document disposal of IDW in a report or email to the TCEQ Project Manager (PM) (include waste manifests).

UN-CONTAMINATED ENVIRONMENTAL MEDIA IDW

If acceptable to the TCEQ PM, it may be possible to return uncontaminated environmental media to the site based on the analytical results of samples collected from associated environmental media. For example, it may be acceptable to characterize drill cuttings based on the borehole sample results from which the cuttings originated; or well purge-water may be characterized based on the groundwater sample results from the well from which the purge-water originated. For the purposes of this SOP, "uncontaminated" environmental media are soil or water which do not contain Target COCs at concentrations in excess of the TRRP Assessment Level. The following procedures should be used for uncontaminated environmental media as site conditions allow:

1. Containerize and store the environmental media IDW;
2. Associate samples with environmental media IDW;
3. In the field logbook, record associated environmental samples for each container;
4. Collect classification samples from representative containers;
5. Classify the IDW based on 1) analyses of associated environmental samples or 2) samples from environmental media IDW; and
6. After reviewing associated sample results and obtaining TCEQ PM Concurrence, deposit uncontaminated environmental media IDW at the site.

Soil IDW should be properly containerized in U.S. Department of Transportation (DOT)-approved containers (55-gallon drums or roll-off bins), labeled, and staged on-site pending.

**STANDARD OPERATING PROCEDURE NO. 1.4
INVESTIGATION-DERIVED WASTE**

SOP#: 1.4
DATE: 8/28/2013
REVISION #: 1
PAGE 4 of 2

TRASH, DISPOSABLE EQUIPMENT, AND PERSONNEL PROTECTIVE EQUIPMENT (PPE)

Non-investigative waste, such as litter and household garbage, should be collected on an as-needed basis to maintain the Site in a clean and orderly manner. This waste will be containerized and transported to the designated sanitary landfill or collection bin. The following procedures should be followed for disposal of trash, equipment, and PPE.

1. Non-hazardous IDW, such as litter, garbage, and non-contaminated PPE, should be collected, stored in appropriate containers, and properly disposed of.
2. Obviously uncontaminated IDW such as trash may be disposed of in accordance with applicable laws.
3. With the owner's permission, trash may be disposed of in available dumpsters, at appropriate landfills, or other public disposal locations.
4. Used PPE should be properly decontaminated, placed in plastic trash bags, and disposed of in accordance with applicable laws.

DRILLING MUD AND DRILLING WATER

The following procedures should be followed for disposal of drilling mud and drilling water.

1. Dispose of drill cuttings, purge or development water, and drilling mud in a permitted landfill or sanitary sewer.
2. Alternatively, obtain permission to place IDW in active facility treatment systems.

PURGE AND DECONTAMINATION WATERS

Purge and decontamination water will be properly containerized, labeled, and stored on site in 55 gallon drums. The following procedures should be followed for disposal of decontamination waters.

1. Collect waste classification samples from decontamination waters.
 2. Classify IDW based on the analytical results.
 3. With the concurrence of the TCEQ PM, pour uncontaminated decontamination water out on the site
 4. Properly dispose of decontamination waters off-site.
-



**STANDARD OPERATING PROCEDURE NO. 1.4
INVESTIGATION-DERIVED WASTE**

SOP#: 1.4
DATE: 8/28/2013
REVISION #: 1
PAGE 5 of 2

3.2 HAZARDOUS IDW

A disposal subcontractor will dispose of any hazardous IDW as specified in applicable regulations.

1. To the extent possible, avoid generating IDW that may meet the definition of hazardous waste.
2. Keep non-hazardous IDW segregated from IDW that may meet the definition of hazardous waste.
3. Properly containerize and label IDW that is suspected to meet the definition of hazardous waste.
4. Store these materials in appropriate containers at a segregated staging area with a secondary containment structure.
5. Perform waste classification analyses requested by the potential disposal facility.
6. Review sample results to determine waste classification.
7. Manifest and transport hazardous waste to a permitted treatment or disposal facility in accordance with waste classification and applicable laws.
8. If required, file an Annual Waste Summary with the TCEQ Office of Waste by the applicable deadline.

4.0 CAUTIONS AND INTERFERENCES

Further guidance on IDW requirements for CERCLA sites may be found at:

http://www.epa.gov/superfund/policy/remedy/pdfs/RCRA_Biennial_Report_Requirements_for_CERCLA.pdf



**STANDARD OPERATING PROCEDURE NO. 1.4
INVESTIGATION-DERIVED WASTE**

SOP#: 1.4
DATE: 8/28/2013
REVISION #: 1
PAGE 6 of 2

APPENDIX A

DRUMMED MATERIAL WORKSHEET

Project Name	Project Number
Site Address	Project Manager

Drum No.	Boring No.	Date	Contents	Sample ID	Lab Results	Disposition



**STANDARD OPERATING PROCEDURE NO. 1.5
DECONTAMINATION**

SOP#: 1.5
DATE: 8/28/2013
REVISION #: 1
PAGE 1 of 3

1.0 METHOD SUMMARY

This standard operating procedure (SOP) provides a description of the methods used for preventing, minimizing, or limiting cross-contamination of samples due to inappropriate or inadequate equipment decontamination and to provide general guidelines for developing decontamination procedures for sampling equipment used during hazardous waste operations. This SOP does not address detailed personnel decontamination; however, all disposable Personal Protective Equipment (PPE) will be decontaminated such that it can be disposed of as Class 3 waste. Non-dedicated sampling equipment and tools will be decontaminated prior to use and between sample locations. Dedicated sampling equipment will be decontaminated prior to first use, unless certified free of contaminants by the manufacturer. The TCEQ Project Manager (PM) may modify the decontamination frequency, as appropriate.

Removing or neutralizing contaminants from equipment minimizes the likelihood of sample cross contamination, reduces or eliminates transfer of contaminants to clean areas, and prevents the mixing of incompatible substances. Gross contamination can be removed by physical decontamination procedures. These abrasive and non-abrasive methods include the use of brushes, air and wet blasting, and high and low pressure water cleaning.

2.0 EQUIPMENT/APPARATUS/REAGENTS

- non-phosphate detergent
- tap water
- distilled or deionized water
- long and short handled brushes
- bottle brushes
- drop cloth/plastic sheeting
- paper towels
- plastic or galvanized tubs or buckets
- pressurized sprayers
- aluminum foil
- re-sealable bags
- trash bags
- appropriate personal protective equipment (PPE)
- face shield (for hard hat)
- high pressure washer (if necessary)
- fuel for high pressure washer
- 55-gallon drums
- plywood
- sump pump
- landscape timbers, 4 x 4's, or 2 x 4's

3.0 PROCEDURES

3.1 Decontamination

Decontamination of drilling equipment, well construction materials, sampling equipment, tools, etc. shall be described in the project work plan or field sampling plan. All samples and equipment leaving the contaminated area of a site must be decontaminated to remove any contamination that may have adhered to equipment. This includes casing, drill bits, auger flights, the portions of drill rigs that stand above boreholes, sampling devices, and instruments, such as slugs and sounders. In addition, the contractor shall take care to prevent the sample from coming into contact with potentially contaminating substances, such as tape, oil, engine exhaust, corroded surfaces, and dirt.



**STANDARD OPERATING PROCEDURE NO. 1.5
DECONTAMINATION**

SOP#: 1.5
DATE: 8/28/2013
REVISION #: 1
PAGE 2 of 3

The following procedures shall be used to decontaminate large pieces of equipment, such as casings, auger flights, pipe and rods, and those portions of the drill rig that may stand directly over a boring or well location or that come into contact with casing, auger flights, pipe, or rods:

1. Prepare the decontamination zone in accordance with SOP 1.2.
2. Don appropriate PPE.
3. Deposit the contaminated equipment on the plastic drop cloth/sheet or in a container inside the contaminant reduction zone (CRZ).
4. Place large pieces of equipment (e.g., auger flights) on sawhorses.
5. Use a high-pressure washer and a low-phosphate soap (e.g., Alconox) to remove encrusted material from grossly contaminated equipment. If necessary, use a brush to scrub the equipment until all visible dirt, grime, grease, oil, loose paint, rust flakes, etc., have been removed.
6. Rinse all equipment with potable water.
7. Store the equipment on sawhorses or wrapped in clean plastic sheeting.
8. Decontamination water should be collected and transferred to a 55-gallon drum at the end of the day or whenever significant quantities of water have accumulated. Drums of investigative derived waste (IDW) should be managed in accordance with SOP 1.4.

The following procedures shall be used to decontaminate small pieces of sampling equipment such as split spoons, bailers, trowels/spoons and bowls:

1. Prepare the decontamination zone in accordance with SOP 1.2.
2. Don appropriate PPE.
3. Scrub the equipment with a solution of potable water and low-phosphate soap (e.g., Alconox).
4. If organic constituents are contaminants of concern, rinse the equipment with a pesticide-grade solvent, typically acetone. If acetone is a constituent of concern, substitute methanol as the rinse agent.
5. Rinse the equipment with copious quantities of distilled or deionized water.
6. Allow the equipment to air dry on a clean surface or rack elevated at least two feet above ground.

Wrap the sampling device in aluminum foil or place in sealable plastic bags prior to reuse.

The following procedures shall be used to decontaminate equipment used in the sampling of media potentially contaminated with metals.

- rinse all equipment with potable water;
- clean equipment with a brush in a solution of laboratory grade detergent (Liquinox, Alconox, or equivalent);
- rinse with potable water;
- rinse with 10% nitric acid solution (trace metals grade);
- rinse with distilled or deionized water;



**STANDARD OPERATING PROCEDURE NO. 1.5
DECONTAMINATION**

SOP#: 1.5
DATE: 8/28/2013
REVISION #: 1
PAGE 3 of 3

- rinse with reagent grade isopropanol if also analyzing for organic compounds;
- rinse with deionized water;
- Allow equipment to completely dry, then collect an equipment rinsate sample using ASTM Type II reagent grade water, seal the rinsate sample container with a custody seal, and place the sample in the shipment cooler;
- Place the equipment on clean plastic sheeting and allow to air dry; and
- If the equipment is not to be used immediately, place small equipment in plastic sealable bag and place a custody-seal across the sealed opening of the bag.

At the completion of the decontamination activities, all fluids and solid waste should be containerized and managed in accordance with SOP 1.4.

If a particular contaminant fraction is not present at the site, the ten (10) step decontamination procedure specified above may be modified for site specificity. For example, the solvent rinse may be eliminated if organics are not of concern at a site. Modifications to the standard procedure should be documented in the site specific work plan or subsequent report.

4.0 CAUTIONS AND INTERFERENCES

1. The use of distilled/deionized water commonly available from commercial vendors is typically acceptable for decontamination of sampling equipment.
2. The use of an untreated potable water supply is not an acceptable substitute for tap water. Tap water may be used from any municipal or industrial water treatment system.
3. If solvents are utilized in decontamination they raise health and safety, and waste disposal concerns.
4. Damage can be incurred by solvent washing of complex and sophisticated sampling equipment.



**STANDARD OPERATING PROCEDURE NO. 6.1
DOCUMENTATION AND REPORTING**

SOP#: 6.1
DATE: 8/28/2013
REVISION #: 2
PAGE 1 of 2

1.0 METHOD SUMMARY

This SOP provides requirements for documenting and reporting site activities. The objective of the documentation program is to accurately and completely describe all field activities, thereby demonstrating that all field activities are conducted in accordance with the project specific Field Sampling Plan or Field Work Plan and applicable Superfund Program Standard Operating Procedures (SOPs).

2.0 EQUIPMENT/APPARATUS/REAGENTS

Equipment typically required for documenting the progress of the project includes:

- Field logbook (bound, pre-paginated, all weather or water resistant)
- Field forms
- Camera
- Video recorder (if necessary)
- Permanent marking pens
- Ink pens (with permanent waterproof, black ink)

The field logbook shall contain the following information at a minimum:

- Location, date and time of each activity
- Weather conditions (changes)
- Activity being performed
- Identity of the person(s) performing the activity
- The numerical value and units of any field measurements
- The identity of, and the calibration results for, each field instrument being used
- All information required to demonstrate that the work is conducted in accordance with applicable Sampling Plans, Work Plans and SOPs
- visitors to the site
- deviations from planned activities.

Specific information which shall be included for each sample includes:

- Sample type and sampling method
- The identity of each sample and depth(s) from which it was collected
- The amount of each sample
- Sample description (e.g., color, odor, clarity)
- Identification of sampling devices
- Identification of conditions that might affect the representativeness of a sample (e.g., refueling operations, damaged well casings)
- All information required to demonstrate that the work is conducted in accordance with applicable Sampling Plans, Work Plans and SOPs

All information relating to installation and development of monitor wells, installation of temporary groundwater sampling points, well development, well purging, groundwater sample collection and all other sampling activities or field work shall be recorded in a field logbook or field form(s). When field forms are used the field logbook shall reference the data noted on field forms and the field forms shall be dated and signed by the author. The field logbook will be bound with consecutively numbered pages and will be suitable for submission as evidence in legal proceedings. Each entry in the field logbooks will be signed and dated by the author. All original data recorded in the field logbook and other field forms will be written



**STANDARD OPERATING PROCEDURE NO. 6.1
DOCUMENTATION AND REPORTING**

SOP#: 6.1
DATE: 8/28/2013
REVISION #: 2
PAGE 2 of 2

using permanent, waterproof ink. Errors made in the field logbook will be corrected by the individual making the entry by crossing a single line through the error, entering the correct information, and dating and initialing the correction. The field logbooks and field forms will become part of the project file, and should be kept in the project file at all times when not in the possession of the field team.

Field corrective actions shall be documented in the field logbook and/or field forms. Field corrective action reports shall document the methods used when general field practices or procedures specified in the standard operating procedures were not followed. The field corrective action reports shall include the methods used to resolve a noncompliance.

3.0 PHOTOGRAPHS

General guidelines (all types of photos):

- If possible, use a camera that has a time and/or date stamp. Record the date and time each photo was taken on the photo or with the photo file (as applicable) and in the field logbook.
- Do not use special lenses (i.e., wide-angle lenses) as they can distort the image
- A brief, accurate description of what the photograph shows, including the name of the site and location shall be recorded in the field logbook.
- Include the name of the photographer, and witness, as applicable.

When photographs are taken the record of each frame exposed/recorded is kept in the bound field logbook along with the information above required for each photograph. The field investigator shall then enter the required information on the prints, slides or CD (if digital photos) using the photographic record from the bound field logbook, to identify each photograph.

Conventional 35 mm Cameras

- Obtain negatives in one continuous, uncut sheet and include with the pictures.
- Arrange photos in album format and include the above information for each photo and submit with the field logbook.

Digital Cameras

- Submit a CD-R of the downloaded picture files in JPEG format (include the above information for each photo) and submit with the field logbook.
- Digital camera recording mode (dependent on camera's pixel resolution quality and picture quality mode) shall be set to achieve a minimum pixel resolution of 1600 x 1200 or higher.

4.0 OTHER FIELD FORMS

Other types of records which may be used in the field include:

- Drum inventory forms
- Well development/purging records
- Boring logs
- Well construction diagrams (as-builts)

5.0 CAUTIONS AND INTERFERENCES

This section is not applicable to this SOP.



**STANDARD OPERATING PROCEDURE NO. 6.3
VOLATILE ORGANIC COMPOUND (VOC) SAMPLES**

SOP#: 6.3
DATE: 8/28/2013
REVISION #: 1
PAGE 1 of 4

1.0 METHOD SUMMARY

The objective of this standard operating procedure (SOP) is to provide guidance for the sampling of volatile organic compounds (VOCs).

2.0 EQUIPMENT/APPARATUS/REAGENTS

Typical equipment required for groundwater and soil sampling includes:

- 40-mL glass vials with a PTFE-lined septum that can be hermetically sealed.
- 5-g samplers, or equivalent, and coring tool used as a transport device.
- Stir bar
- Bailer (stainless steel or disposable)
- Scoop or spatula
- 4-oz glass sample jars
- Portable balance - For field use, capable of weighing to 0.01 gram.

3.0 PROCEDURES

3.1 Water Sample Collection

The following procedures shall be followed for the collection of groundwater VOC samples. The sample volume shall be dictated in the Field Sampling Plan:

1. The 40-mL glass sample vials must be pre-cleaned and/or be certified free of VOCs.
2. Wells shall be purged in accordance with one of the following SOPs: SOP 7.2 (Monitor Well Purging with a Bailer), SOP 7.3 (Monitor Well Purging with a Pump), or SOP 7.3 (Monitor Well Micro Purging).
3. Label sample vials in accordance with SOP 6.5 (Sample Handling and Control).
4. Carefully fill a 40-mL vial with a slow, steady stream of water down the side of the vial to minimize aeration of the sample.
5. Fill the vial with water to the top so that a meniscus is formed. Allow any air bubbles to rise to the surface. Carefully and quickly screw the cap onto the container and finger tighten.
6. Invert the vial and tap it gently, looking for any air bubbles. If the sample contains air bubbles, discard the sample and repeat the sampling process with a new sampling container.
7. Refer to the site-specific field sampling plan for the site-specific sample volume. The typical sample volume for a regular water sample is three 40-mL vials. Six additional 40-mL vials are typically needed for the sample identified as the matrix spike/matrix spike duplicate (MS/MSD).
8. Preserve to a pH of 2 with HCl and cool to 4°C ($\pm 2^\circ\text{C}$) immediately after collection. DO NOT FREEZE water samples. Samples collected for determining concentrations of highly reactive VOCs, (e.g., vinyl chloride, styrene, 2-chlorovinylether, or acrylamide) will not be acid preserved and must be analyzed within seven days.
9. Package sample for shipment in accordance with SOP 6.5
10. During sample shipment, all conditions relating to the isolation/segregation of the samples from potential contaminants (gasoline/diesel engines or generators, highly contaminated samples, etc.) must be observed.



**STANDARD OPERATING PROCEDURE NO. 6.3
VOLATILE ORGANIC COMPOUND (VOC) SAMPLES**

SOP#: 6.3
DATE: 8/28/2013
REVISION #: 1
PAGE 2 of 4

11. Decontaminate all non-disposable sampling equipment prior to moving to new sampling point and in accordance with SOP 1.5
12. Groundwater and surface water samples for VOC analysis that are not acid preserved will be cooled in the field for transport and storage and analyzed within seven days of collection.

3.2 Soil Sample Collection

This section is based on the TCEQ Guidance on SW846-5035 and provides guidance for the implementation of Method 5035. The intent of Method 5035 is to collect the sample causing the least amount of disturbance to the soil structure and to transfer and hermetically seal the sample in a sample container as quickly as possible.

The recommended method of sample collection for both low and high concentration soils is the closed-system field collection using hermetically sealed 40-mL vials or hermetically sealed intermediate sample containers. Refer to the site-specific field sampling plan for the sample mass and equipment needed. The typical sample equipment needed for a regular soil sample is three 40-mL vials with each to hold 5-grams of soil. Six 40-mL vials are typically needed for the sample identified as the matrix spike/matrix spike duplicate (MS/MSD).

Bulk sampling can be used for sample points where contamination is expected to be high or where the procedure requires a sample volume that exceeds the recommended 5 grams, such as TCLP determination, or where a sample using Method 5035 procedures cannot be collected. Method 5035 includes a procedure for preparing low concentration samples, i.e., soil samples that can reasonably be expected to contain concentrations of VOCs between 5 mg/kg and 200 mg/kg, and a second procedure for high concentration samples, i.e., soil samples that are expected to contain greater than 200 mg/kg of VOCs.

It is recommended that screening of samples, both in the field using an appropriate field instrument and in the laboratory using a gas chromatography screening method, be conducted prior to selecting the Method 5035 option. The appropriate analytical methodology shall be dictated in the Field Sampling Plan.

3.2.1 Field procedures

This recommended sample collection technique does not require preservative.

1. The 40-mL amber glass sample vials must be pre-cleaned and/or be certified free of VOCs.
2. Sample vials should be prepared in a fixed laboratory or other controlled environment. The tare weight of the sample vial including cap, septum, and label must be determined and recorded on the label prior to shipping the vials to the field for sample collection. Clean gloves should be worn when handling tared vials.
3. Exposure to air must be minimized by obtaining the sample directly from the source media using a coring device or a commercially designed sampling device and by transferring the sample as quickly as possible to a vial (or sealing the sample borer/hermetically sealed sample container immediately). The vial should be quickly wiped free of any particulate matter that would compromise the integrity of the vial seal. Fingers should be used to minimize exposure to air by forming a temporary seal between the vial and the sampling device. The coring/sampling device must be designed to fit tightly against the mouth of the vial or be small enough to be inserted into the vial. The vial must be hermetically sealed immediately after placing the sample in the vial.



**STANDARD OPERATING PROCEDURE NO. 6.3
VOLATILE ORGANIC COMPOUND (VOC) SAMPLES**

SOP#: 6.3
DATE: 8/28/2013
REVISION #: 1
PAGE 3 of 4

4. The coring device can be used to collect multiple aliquots from the same sample point provided the integrity of the coring device is not compromised. If the coring device is designed and approved to be used as a temporary storage device for transport to the laboratory, the manufacturer's instructions should be followed. If a bulk sample is being collected because the concentrations in the soil are considered high, a 4-oz sample jar should be filled to capacity to minimize the head space in the sample container.
5. Refer to the site-specific field sampling plan for the site-specific sample mass needed. The typical sample size collected should be three aliquots, approximately 5 grams (10 grams for TPH analysis by TCEQ 1005 and 1006) each. Typically, six aliquots are collected at each sample point for matrix spike/matrix spike duplicate (MS/MSD) sampling. The coring device should be calibrated to the required sample size and designed to minimize the disturbance of the sample during collection. Several calibrated coring devices are available commercially. When practical, use a portable balance to weigh the sealed vial containing the sample to ensure that 5.0 ± 0.5 grams of sample were added. For non-cohesive soils and waste (e.g., dry sand, fly ash, etc.), highly cohesive materials (e.g., concrete, rock, etc), and soils that have high compressive and shear strength, the sample should be quickly transferred into a 4-oz jar using a scoop or spatula. Enough sample should be collected such that the head space in the jar is minimized.
6. A bulk sample with no preservative should be collected to use for screening purposes in the laboratory, but not for quantitative analysis. After the sample is screened in the laboratory, the sample can be used to determine the percent moisture, to run the MS/MSD, to check reactivity with sodium bisulfate, and/or to determine the appropriate extraction solvent, as necessary.
7. For the samples with high concentrations of VOCs, the sample is extracted with methanol and the extract is used for dilutions and/or re-analysis. Therefore, only two aliquots are recommended, one aliquot for analysis and one aliquot for re-analysis, if necessary. If the VOC concentration is unknown, collect three aliquots.
8. Sample containers remain unopened from the time of collection until analysis.
9. The use of a balance in the field is required to check the tare weight when field preservation with methanol is being conducted. For other sample collection procedures, balances are used to verify that an adequate volume (weight) of soil is collected, because the initial soil sample size will affect the quantitation limit that can be achieved on the sample.
10. All samples must be properly packaged (SOP 6.4) and chilled to 4°C ($\pm 2^{\circ}\text{C}$) immediately upon collection.
11. During sample shipment, all conditions relating to the isolation/segregation of the samples from potential contaminants (gasoline/diesel engines or generators, highly contaminated samples, etc.) must be observed.
12. Decontaminate all non-disposable sampling equipment prior to moving to another well and/or at the end of the day.

3.2.2 Quality Control

The laboratory quality control measures specified throughout Method 5035 must be followed. Field quality control measures should include a trip blank in every sample shuttle that contains samples for volatile analysis regardless of the sample collection technique.



**STANDARD OPERATING PROCEDURE NO. 6.3
VOLATILE ORGANIC COMPOUND (VOC) SAMPLES**

SOP#: 6.3
DATE: 8/28/2013
REVISION #: 1
PAGE 4 of 4

4.0 CAUTIONS AND INTERFERENCES

4.1 Groundwater Sample Collection

Make sure that there are no air bubbles in the sample bottle. Be careful not to agitate the sample. The sample bottle should be quickly sealed, chilled to 4°C ($\pm 2^\circ\text{C}$), and shipped to the laboratory.

4.2 Soil Sample Collection

The recommended method of sample collection for both low and high concentration soils is to collect the sample using a coring device and to quickly extrude the sample core into a tared 40-mL vial that does not contain preservative but does contain the stir bar, if applicable. The threads of the vial are inspected and wiped clean, and the vial is quickly sealed and chilled, held at 4°C ($\pm 2^\circ\text{C}$), and shipped to the laboratory. The laboratory should analyze the sample within 48 hours from the time of collection. Alternatively, the laboratory can preserve the sample within the 48 hour time frame to extend the holding time to 14 days. The manual addition of any water, surrogates, and/or internal standards, and all additions of preservatives should be made using a 22-gauge or thinner needle through the septum seal. This collection procedure does not require the use of preservatives in the field or balances in the field. An alternative method is the collection of the sample using an approved coring device that serves as an intermediate hermetically sealed sample container. This type of sampling device should be used according to the manufacturer's instructions.



**STANDARD OPERATING PROCEDURE NO. 6.4
SAMPLE HANDLING AND CONTROL**

SOP#: 6.4
DATE: 8/28/13
REVISION #: 1
PAGE 1 of 4

1.0 METHOD SUMMARY

This SOP presents procedures for maintaining control of environmental samples following collection through shipment to the analytical laboratory. In addition, this SOP describes standard chain-of-custody protocols which should be followed to document the possession of samples from the time of collection until the laboratory report is submitted.

2.0 EQUIPMENT/APPARATUS/REAGENTS

Equipment needed for use in this SOP includes:

- Pre-cleaned sample containers
- Preservatives (if not in containers)
- Sturdy cooler, in good repair
- Fiberglass strapping tape
- Duct tape
- Clear tape
- Bubble wrap or other packing material
- Ziploc-type bags
- Trash bags
- Ice
- Shipping labels
- Pens, markers, etc.

3.0 PROCEDURES

3.1 Sample Packaging

Environmental samples should be packed prior to shipment using the following procedures:

1. Allow sufficient headspace (approximately 10 percent of the volume of the container) in all bottles (except volatile organic analysis (VOA) vials with a septum seal) to compensate for any pressure and temperature changes which may occur during shipment.
2. Ensure that the lids on all bottles are tight.
3. Select a sturdy cooler in good repair. Secure and tape the drain plug with fiberglass strapping tape or duct tape. Line the cooler with a heavy duty plastic garbage bag.
4. Place glass sample bottles into bubble wrap bags or wrap a layer of bubble wrap around glass containers. Many laboratories provide bubble wrap bags for sample shipment. Place two to three VOA vials in a single bag.
5. Place the bottles in the cooler with larger bottles on the bottom inside the garbage bag. Insert polyethylene bottles between glass bottles for cushion. Put VOA vials (in bubble wrap bags) on their side on top of the larger sample containers.
6. Ensure that a trip blank has been included as appropriate for VOA samples and that a temperature blank (if supplied) is included as outlined in SOP No. 6.3, and SOP No. 6.5.
7. Place ice that has been double bagged on top of and/or between the samples. Fill remaining void space in the cooler with bubble wrap. Ensure that a sufficient quantity of ice has been placed into the cooler to maintain VOC samples at 4°C. In summer months, it may be necessary to fill as much as 50 percent of the cooler volume with ice to properly cool warm samples.
8. Securely fasten the top of the garbage bag with tape.



**STANDARD OPERATING PROCEDURE NO. 6.4
SAMPLE HANDLING AND CONTROL**

SOP#: 6.4
DATE: 8/28/13
REVISION #: 1
PAGE 2 of 4

9. Place the Chain-of-Custody record into a Ziploc-type bag and tape the bag to the inside of the cooler lid.
10. Close the cooler and securely tape (preferably with fiberglass strapping tape) the top of the cooler shut. Chain-of-custody seals (preferably two) should be affixed to the cooler with clear tape so that the cooler can not be opened without breaking the seals.
11. Place the shipping label in a sealed pouch on the lid of the cooler for shipment. A label containing the name and address of the shipper and the destination should be placed on the outside of each additional cooler included in the shipment.

3.2 Sample Shipping

Samples collected in the field shall be transported to the laboratory or field testing site as expeditiously as possible (within 24 hours of sampling) to avoid hold time exceedances and to ensure that samples remain properly preserved. Samples for VOC analysis must be maintained at a temperature of 4°C.

In general environmental samples include drinking water, most ground water and ambient surface water, soil, sediment, treated municipal and industrial wastewater effluent, biological specimens, or any samples not expected to be contaminated with high levels of hazardous materials. Samples collected from process wastewater streams, drums, bulk storage tanks, soil, sediment, or water samples from areas suspected of being highly contaminated may require shipment as dangerous goods. Regulations for packing marking, labeling, and shipping of dangerous goods by air transport are promulgated by the International Air Transport Authority (IATA), which is equivalent to United Nations International Civil Aviation Organization (UN/ICAO). It is the responsibility of the shipper to ensure that shipments are made in accordance with all applicable laws, including contents and labeling.

3.3 Sample Chain-of-Custody

Procedures to ensure the custody and integrity of the samples should begin at the time of sampling and continue through transport, sample receipt, preparation, analysis and storage, data generation and reporting, and sample disposal. Records concerning the custody and condition of the samples are maintained in field laboratory records.

The contractor shall maintain chain-of-custody records for all field and field QC samples. A sample is defined as being within a person's custody if any of the following conditions exist:

- It is in their possession,
- It is in their view,
- It was in their possession and they secured it in a locked area, or
- It is in a designated secured area.

All sample containers shall be sealed in a manner that shall prevent or provide detection of tampering if it occurs. In no case shall tape be used to seal sample containers. Samples shall not be packaged with activated carbon unless prior approval is obtained from TCEQ.

The following minimum information concerning the sample shall be documented on the TCEQ chain-of-custody form (Attachment 1):

- Unique sample identification
- Date and time of sample collection
- Source of sample (including name, location, and sample type)



**STANDARD OPERATING PROCEDURE NO. 6.4
SAMPLE HANDLING AND CONTROL**

SOP#: 6.4
DATE: 8/28/13
REVISION #: 1
PAGE 3 of 4

- Designation of matrix spike/matrix spike duplicate (MS/MSD)
- Preservative used
- Analyses required
- Number of sample containers
- Pertinent field data (pH, temperature, elevated headspace results or contaminant concentrations)
- Serial numbers of custody seals and transportation cases (if used)
- Name(s) of person(s) collecting the samples
- Custody transfer signatures and dates and times of sample transfer from the field to transporters and to the laboratory or laboratories
- Transporter tracking number (if applicable) or courier receipts

4.0 CAUTIONS AND INTERFERENCES

This section is not applicable to this SOP.

SAMPLE HANDLING AND CONTROL

Page ____ of ____

[illegible]



STANDARD OPERATING PROCEDURE NO. 6.4

SAMPLE HANDLING AND CONTROL

Received for Laboratory by:			
-----------------------------	--	--	--

Custody.frm/jdg 3-09-92

White copy - Laboratory



**STANDARD OPERATING PROCEDURE NO. 6.5
QUALITY CONTROL SAMPLES**

SOP#: 6.5
DATE: 8/28/2013
REVISION #: 1
PAGE 1 of 7

1.0 METHOD SUMMARY

Quality control (QC) samples are collected to determine if sample bottle preparation, shipment, handling, and storage procedures result in contamination or other effects on environmental samples. QC samples include:

- Equipment Blanks.
- Trip Blanks.
- Field Blanks.
- Temperature Blanks.
- Field Duplicate Samples.
- Field Split Samples.
- Matrix Spike/Matrix Spike Duplicates (MS/MSD).

2.0 EQUIPMENT/APPARATUS/REAGENTS

The following equipment is used for collection of QC samples:

- Pre-cleaned sample containers (with preservatives, if required)
- ASTM Type II reagent grade water
- Stainless steel sampling bowl
- Stainless steel sampling spoon
- Other equipment as prescribed for collecting samples

3.0 PROCEDURES

3.1 EQUIPMENT BLANKS

Equipment blanks are used to assess the effectiveness of equipment decontamination procedures. An equipment blank (also known as a rinsate blank) is a sample of ASTM Type II reagent grade water poured into, over, or pumped through the sampling device; collected in a sample container; and transported to the laboratory for analysis. These blanks are collected immediately after the equipment has been decontaminated and are analyzed for all laboratory analyses requested for the environmental samples collected with that equipment.

FREQUENCY

Equipment blanks are not collected from disposable or dedicated (e.g., a monitoring well bailer dedicated to a single well) equipment. They are collected at a frequency of one blank per equipment type, per environmental media, per day.

PROCEDURE

Equipment blanks should be collected using the following procedures:



**STANDARD OPERATING PROCEDURE NO. 6.5
QUALITY CONTROL SAMPLES**

SOP#: 6.5
DATE: 8/28/2013
REVISION #: 1
PAGE 2 of 7

1. Properly decontaminate the sampling device [see SOP 1.5 (Decontamination)].
2. Select the proper sample containers and an appropriate quantity of ASTM Type II reagent grade water.
3. Complete the sample labels with the appropriate information.
4. Slowly pour the ASTM Type II reagent grade water through or over the sampling device until the sample bottle is filled to the appropriate level.
5. Securely tighten the cap on the bottle.
6. Prepare the bottle for shipment in accordance with SOP 6.4 (Sampling Handling and Control).

DATA EVALUATION

Contamination detected in the equipment blank may indicate that contamination was introduced by the sampling equipment. If the same analytes are found in the field samples, these analytes may represent contamination originating from the sampling equipment.

3.2 TRIP BLANKS

Samples can be contaminated by diffusion of volatile organic compounds (VOCs) through the septum seal into the sample during storage, shipping, and handling. Contamination may also be present in the bottles used to contain the sample or in the reagent grade water.

Trip blanks are used to assess the potential introduction of VOC contaminants to the sample during sample handling, transportation, and storage. They consist of a VOC sample vial filled in the laboratory with ASTM Type II reagent grade water, transported to the sampling site, handled like an environmental sample, and returned to the laboratory for analysis. The trip blank is shipped and stored with VOC water samples and should not be opened in the field.

FREQUENCY

Trip blanks are prepared only when VOC samples are collected and are analyzed only for VOC analytes. One trip blank should be included in each sample cooler containing samples for VOC analysis.

PROCEDURE

The procedures for submitting a trip blank are:

1. Prepare the coolers for shipment to the laboratory. If possible, pack all samples for VOC analysis in one cooler so that only one trip blank is required.
2. Identify the trip blank on the chain-of-custody record. If the project will continue for several days, be sure to number trip blanks sequentially so that multiple trip blanks with the same identification number are not submitted to the laboratory.



**STANDARD OPERATING PROCEDURE NO. 6.5
QUALITY CONTROL SAMPLES**

SOP#: 6.5
DATE: 8/28/2013
REVISION #: 1
PAGE 3 of 7

DATA EVALUATION

Contamination detected in the trip blank may indicate that contamination was present in the sample bottles or was introduced during sample handling. If the same analytes are found in the field samples, these analytes may represent contamination introduced during sample handling, transportation, or storage.

3.3 FIELD BLANKS

Field blanks are used to assess the potential introduction of contaminants from field sources (e.g., gasoline motors in operation) to the samples during sample collection. A field blank consists of ASTM Type II reagent grade water poured into a VOC sample vial at the sampling site (in the same vicinity as the associated samples). Field blanks must be collected downwind of possible VOC sources. The field blank is handled like an environmental sample and transported to the laboratory for analysis.

FREQUENCY

Field blanks are prepared only when VOC samples are collected and are analyzed only for VOC analytes. They are collected at a frequency of one blank per 20 VOC samples for each matrix.

PROCEDURE

The procedures for collecting field blanks are:

1. Select the proper sample containers (VOC vials) and an appropriate quantity of ASTM Type II reagent grade water.
2. Complete the sample labels with the appropriate information.
3. Pour the ASTM Type II reagent grade water into the vial just to overflowing so that there is a meniscus at the top of the vials.
4. Securely tighten the lid on the sample vials.
5. Prepare the sample for shipment in accordance with SOP 6.4 (Sampling Handling and Control).

DATA EVALUATION

Contamination detected in the field blank may indicate that VOC contamination was introduced from field sources. If the same analytes are found in the field samples, these analytes may represent contamination introduced during sample collection, transportation, or storage.

3.4 TEMPERATURE BLANKS

Temperature blanks are prepared by the analytical laboratory and included in the shipment of sample coolers and containers. They are used to determine the temperature of the environmental samples upon receipt by the laboratory.



**STANDARD OPERATING PROCEDURE NO. 6.5
QUALITY CONTROL SAMPLES**

SOP#: 6.5
DATE: 8/28/2013
REVISION #: 1
PAGE 4 of 7

FREQUENCY

A temperature blank will be included with each cooler sent to the laboratory with environmental samples.

PROCEDURE

Temperature blanks are typically prepared by the analytical laboratory and included in the shipment of sample coolers and containers. The temperature of temperature blank samples is measured by the laboratory upon receipt of environmental samples.

DATA EVALUATION

Excessive temperature in the blank may indicate the potential for analyte loss or degradation prior to sample analysis.

3.5 FIELD DUPLICATE SAMPLES

Field duplicate samples are collected simultaneously or in immediate succession, using identical recovery techniques, and treated in an identical manner during storage, transportation, and analysis. Locations for field duplicate samples should be designated prior to field work but should be adjusted in the field based on field observations. They are shipped "blind" to the laboratory (the nomenclature used to identify the duplicate sample does not reveal to the laboratory that the sample is part of a field duplicate pair).

3.6 FIELD SPLIT SAMPLES

Field split samples are collected by retrieving double sample volume from the environmental matrix from one location, fully homogenizing the complete volume, and from that homogenized volume collecting two separate aliquots. Each aliquot is given a unique sample number. Field split samples are intended to evaluate laboratory precision if sent "blind" to the same laboratory. Field split samples are intended to evaluate inter-laboratory precision if the samples are sent to separate laboratories and each laboratory performs the same analysis using the same standard operating procedure(s) for the preparation and analysis of the sample.

FREQUENCY

The frequency of collection of field duplicates is specified in the FSP.

PROCEDURE

The procedures for collecting field duplicates are:

1. Select the proper sample containers for collecting two samples.
2. Complete the sample labels with the appropriate information.



STANDARD OPERATING PROCEDURE NO. 6.5
QUALITY CONTROL SAMPLES

SOP#: 6.5
DATE: 8/28/2013
REVISION #: 1
PAGE 5 of 7

3. Specify the locations designated for the collection of field duplicate samples. (If possible, collect field duplicate samples in areas known to be contaminated to assess the laboratory's ability to measure contamination).
4. Collect the sample as required.
 - a. Groundwater Samples
 - i. Collect the sample in accordance with the appropriate sampling SOP.
 - ii. Fill the first sample bottle half full with the pump or bailer then fill the second sample bottle half full. Fill the remainder of each sample bottle beginning with the first bottle. If a bailer is used, attempt to fill equal quantities from each bailer load into both bottles.
 - b. Soil Samples
 - i. Collect double the required volume of soil for a normal sample in accordance with the appropriate sampling SOP.
 - ii. Place the soil in a stainless steel bowl and mix the sample with a stainless steel spoon. Do not mix samples for VOC analysis as the mixing process may cause a release of VOCs.
 - iii. Arrange the soil into quarters within the sample bowl and set aside two of the quarters.
 - iv. Mix the sample again.
 - v. Fill the appropriate sample jars using the material from the bowl, placing equal portions of soil in the each bottle.
5. Securely tighten the caps on the sample bottles.
6. Prepare the sample for shipment in accordance with SOP 6.5 (Sampling Handling and Control).

DATA EVALUATION

Field duplicate sample results may be used to assess total precision, which includes the inherent spatial variability of contaminants in the field, the sample collection process, any mixing process employed, and the laboratory extraction and analysis process. The two largest components of variability (imprecision) are the inherent spatial variability of contaminants in the field and the mixing process. These two components of variability cannot be assessed separately from the other components of variability through the collection of low numbers of field duplicate samples. There are no corrective actions for the failure to achieve duplicate goals.

Field duplicate sample collection and analyses result in two equally valid analytical results (hence the term "duplicate"). Neither the "original" sample nor the "duplicate" sample is more valid than the other. Therefore, both sample results should be considered in environmental projects. As listed below, several options are available depending on the situation and the goal of the project:

1. Use both sample results;
2. Use the mean of the two sample results; or



**STANDARD OPERATING PROCEDURE NO. 6.5
QUALITY CONTROL SAMPLES**

SOP#: 6.5
DATE: 8/28/2013
REVISION #: 1
PAGE 6 of 7

3. Use the maximum of the two sample results.

3.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

A matrix spike is a measured, known amount of target analyte which is added to a sample prior to extraction and analysis in order to determine the effects the sample matrix (e.g., soil, waste, or water) has on the recovery of contaminants.

Frequently the sample to be used for spiking is split into three aliquots, two of which are spiked with known concentrations of contaminants. Many laboratories can prepare the MS/MSD samples from the submitted sample volume, while others may require additional (e.g. triplicate) volume. The two spiked aliquots are known as the matrix spike (MS) and the matrix spike duplicate (MSD) sample.

The MS and MSD are spiked at a level less than or equal to the midpoint of the calibration curve for each analyte identified in the FSP. When the contaminants are not identified in the FSP, the MS/MSD are spiked with a subset of the analytes included in the laboratory's initial calibration standard mixture(s) that are representative of the range and characteristics of the calibrated analytes. All three aliquots are analyzed.

The choice of which sample to select for the MS/MSD analysis is important. If left up to the laboratory, a relatively contaminant-free sample, which is likely to provide good matrix spike recoveries, may be selected. This practice circumvents the primary purpose of the MS/MSD analysis, which is to assess matrix effects that may be associated with samples from a site. Therefore, the sample to be used for the MS/MSD should be designated by the field team from likely contaminated areas; however, source areas or sample locations with known high concentrations should not be selected for the MS/MSD analysis. Only TCEQ project samples should be used for the MS/MSD on Superfund projects.

FREQUENCY

One MS/MSD sample will be designated for every 20 environmental samples per environmental medium.

PROCEDURE

The following procedures apply to MS/MSDs:

1. Contact the laboratory to confirm the necessary volume for MS/MSD samples.
2. Plan which field locations will be appropriate to collect MS/MSD samples.
3. Collect the required volume for the designated sample(s).
4. Identify the MS/MSD and associated parent sample on the chain of custody.
5. Ship the sample with other environmental samples.
6. Confirm that the TCEQ samples were analyzed as the MS/MSD at the required frequency.

DATA EVALUATION



**STANDARD OPERATING PROCEDURE NO. 6.5
QUALITY CONTROL SAMPLES**

SOP#: 6.5
DATE: 8/28/2013
REVISION #: 1
PAGE 7 of 7

Percent recoveries are calculated for each of the spiked analytes to give an indication of how the matrix is affecting the reported concentrations (i.e. the direction and magnitude of any potential bias to the reported sample results). The relative percent difference (%RSD) between the MS and the MSD is calculated to assess the analytical precision of the laboratory. TCEQ does not use the MS/MSD to control the analytical process.

4.0 CAUTIONS AND INTERFERENCES

The types of QC samples and frequency for collection are outlined in the project Quality Assurance Project Plan (QAPP). It is important to identify the sample frequency in the Field Sampling Plan (FSP). QC samples should be selected to match the sampling program (i.e., it is not necessary to collect trip blanks for sites where only samples for metals analysis are being collected).



**STANDARD OPERATING PROCEDURE NO. 7.5
MEASUREMENT OF FIELD PARAMETERS**

SOP#: 7.5

DATE: 4/25/2001

REVISION #: 0

PAGE 1 of 3

1.0 METHOD SUMMARY

Field parameters are collected during surface water or groundwater sampling events to identify physical/chemical characteristics of the sample that are representative of field conditions as they exist at the time of sample collection. They are also used to indicate when stagnant water has been removed from the well so that sampling may begin. Numerous instruments are commercially available for measuring field parameters. The setup and use of all instruments should follow a basic format to imply consistency of use. Regardless of the brand of meter used, all meters should be properly maintained and operated in accordance with the manufacturer's instructions and calibrations should be checked prior to use.

2.0 EQUIPMENT/APPARATUS/REAGENTS

The following is a typical equipment list used for measuring field parameters:

2.1 Equipment List

- Logbook
- Field data sheets
- Decontamination solutions
- Tap water
- Field parameter instruments (pH meter, thermometer, conductivity meter, turbidimeter, DO meter)
- Calibration standards
- Tap water
- Non-phosphate soap (Note: Alconox is not considered a non-phosphate soap; rather a low-phosphate soap)
- Glass bulb thermometer

3.0 PROCEDURES

3.1 Temperature

Temperature is a measure of hotness or coldness on a defined scale as measured using a thermometer. Typical types of thermometers include:

- Digital (thermo-couple) thermistor
- Glass bulb mercury filled
- Bi-metal strip/dial indicator

No matter which type of thermometer is used, it should be calibrated prior to use, if possible. Digital thermometers should be calibrated prior to use by comparison with a mercury bulb thermometer and should agree within ± 0.5 °C.

The procedures for measuring temperature are as follows:

1. Clean the probe end with analyte-free water and immerse into sample.
2. Swirl the thermometer in the sample.
3. Allow the thermometer to equilibrate with the sample.
4. Suspend the thermometer away from the sides and bottom to observe the reading.
5. Record the reading in the field log book or on the appropriate sampling log sheet. Units of temperature are degrees Celsius (°C) and should be recorded to the nearest tenth (0.1).

Conversion Formulas:

$$^{\circ}\text{F} = (1.8 ^{\circ}\text{C}) + 32^{\circ} \quad \text{or} \quad ^{\circ}\text{C} = 0.56 (^{\circ}\text{F} - 32^{\circ})$$



**STANDARD OPERATING PROCEDURE NO. 7.5
MEASUREMENT OF FIELD PARAMETERS**

SOP#: 7.5

DATE: 4/25/2001

REVISION #: 0

PAGE 2 of 3

3.2 pH

Hydrogen ion concentration (pH) is used to express both acidity and alkalinity on a scale which ranges from 0 to 14 with 7 representing neutrality.

The procedures for measuring pH in the field are as follows:

1. Calibrate the instrument in accordance with the manufacturer=s specifications.
2. Collect a sample. Measure the temperature prior to measuring the pH.
3. Immerse the probe in the sample, keeping it away from the sides and bottom of the sample container. Allow ample time for the probe to equilibrate with the sample.
4. While suspending the probe away from the sides and bottom of the sample container, record the pH. Units of pH are standard units and should be recorded in tenths (0.1).
5. Rinse the probe with analyte-free water and store it in an analyte-free water filled container until the next sample is ready.
6. Perform a post calibration at the end of the day and record all findings.

3.3 Conductivity

Conductivity is defined as the quality or power of conducting or transmitting. The procedures for measuring conductivity in the field are as follows:

1. Calibrate the instrument in accordance with the manufacturer=s specifications.
2. Collect the sample and check and record its temperature.
3. Correct the conductivity instruments temperature adjustment to the temperature of the sample (if required).
4. Immerse the probe in the sample keeping it away from the sides and bottom of the container. It is important that the entire portion of the probe be wetted by the sample. This will be evident when some of the sample water is seen coming out of the small weep hole.
5. Record the result in the field log book or field sampling sheet. Units of conductivity are micro ohms per centimeter ($\mu\text{ohms/cm}$) at 25°C. Results should be reported to the nearest 10 units for readings below 1,000 $\Phi\text{ohms/cm}$ and to the nearest 100 units for readings above 1,000 $\Phi\text{ohms/cm}$.
6. Rinse probe.

3.4 Dissolved Oxygen

Dissolved oxygen (DO) should be measured in-situ or Adown hole@ whenever possible. If in-situ measurements are not possible, precautions should be taken to minimize the time the sample is exposed to ambient air. Dissolved oxygen readings should not exceed the saturation limit of oxygen in water (8 to 10 mg/l). If readings greater than 10mg/l are observed, the meter is probably not functioning correctly. The procedures for collecting a DO sample are as follows:

1. Inspect the membrane of the DO meter for air bubbles and/or holes. If air bubbles or holes exist, replace the membrane.
2. Calibrate the DO meter in accordance with the manufacturer=s specifications.



**STANDARD OPERATING PROCEDURE NO. 7.5
MEASUREMENT OF FIELD PARAMETERS**

SOP#: 7.5
DATE: 4/25/2001
REVISION #: 0
PAGE 3 of 3

3. Measure the temperature of the sample and adjust the temperature setting of the DO meter, if so equipped.
4. Record the reading in the field log book or field sampling sheet. Dissolved oxygen is measured in units of mg/l. Results should be reported to the nearest tenth of a unit (0.1).

3.5 Turbidity

Turbidity is measured using a nephelometer/turbidimeter. The procedures for measuring turbidity are as follows:

1. Rinse the sample cell with analyte-free water.
2. Follow the manufacturer=s specifications for collecting a turbidity measurement.
3. Record the reading in the field log book or field sampling sheet. The units of turbidity are nephelometric turbidity units or NTUs. Units should be recorded to the nearest whole unit.

4.0 CAUTIONS AND INTERFERENCES

Refer to owner=s manual for instructions on proper calibration methods of all field parameter measuring equipment.



**STANDARD OPERATING PROCEDURE NO. 17.1
GLOBAL POSITIONING SYSTEM DATA
COLLECTION AND SUBMISSION**

SOP#: 17.1
DATE: 12/4/2003
REVISION #: 0
PAGE 1 of 8

1.0 METHOD SUMMARY

TCEQ requires the use of Global Positional System (GPS) in conjunction with other technologies to collect and maintain positional data that provides physical and environmental site information about plume and contaminate changes over time. Also GPS technologies are used to provide the boundaries of buildings, real property, waste areas, locations of wells and other relevant site features.

2.0 GPS CERTIFICATION

To ensure that TCEQ receives reliable and accurate positional data, TCEQ OPP 8.12 requires that the GPS data collector must be certified. The TCEQ staff may obtain GPS certification by attending a training course presented by either an internal GPS trainer or by a manufacturer-certified GPS trainer. Non-TCEQ staff may obtain GPS certification from a manufacturer-certified GPS trainer. All GPS data collectors must verify that the certification instruction they have received meets the minimum elements listed in Table 1 - GPS Certified Training Minimum Elements in the Third Party GPS Training Certification section of this SOP.

3.0 EQUIPMENT/APPARATUS

- A DGPS (Differential Global Positioning System) receiver can be either a stand alone unit, or a GPS module with Differential GPS antenna and relevant satellite subscription, plugged into a portable computer. The DGPS receiver must:
 - Have six channel parallel reception or better.
 - Have sub-meter horizontal accuracy.
 - Employ these processing parameters:

○ Position acquisition rate	-	1/second or better
○ Position mode	-	3D (uses 4 satellites)
○ Maximum PDOP	-	6(or less)
○ Minimum Elevation	-	User-Selectable (record elevation accuracy)
- Have the ability to perform real-time differential correction (no post processing).
- Receive correction data from a recognized, reliable source, and which is appropriate for real-time correction in the geographic area in which the GPS measurements will be made.
- Output correction data in RTCM-SC104 (Radio Technical Commission of Maritime Service - Special Committee Paper No.104) format via an RS-232 cable or other compatible connection which matches the DGPS receiver.
- Have ability to store at least 180 position measurements.
- Have ability to transfer almanac and position data to a personal computer via a serial port or USB connection.
- Include software to perform mission planning, differential correction, point data averaging, and conversion to common formats (Grid or ArcView).
- Have a water and shock resistant case.
- Include portable power source(s) which will last a full working day.



**STANDARD OPERATING PROCEDURE NO. 17.1
GLOBAL POSITIONING SYSTEM DATA
COLLECTION AND SUBMISSION**

SOP#: 17.1
DATE: 12/4/2003
REVISION #: 0
PAGE 2 of 8

- All weather proof Field Log Book.
- A laser rangefinder (optional)

4.0 GPS DATA COLLECTION AND ACCURACY

Horizontal Accuracy - All horizontal positions collected using certified GPS units shall maintain sub-meter accuracy. In order to meet sub-meter accuracy, latitude and longitude coordinates should be carried out to at least 6 places for decimal degree and at least 2 place for decimal seconds.

DGPS - Differential Global Positioning System (DGPS) receiver which corrects the atmospheric effects. DGPS are used for realtime GPS mapping and tracking without the need for post-processing.

PDOP - Positional Dilution of Precision. A measure of the quality of a GPS measurement taken from a given set of four satellites at a given time. If the satellites are not widely distributed from the user's location, the PDOP value will be higher, and the quality of the measurement will be diminished. PDOP values greater than 6 are not acceptable.

Datum - A mathematical model used by cartographers to define the shape of the earth in a specific area. Always use North America Datum of 1983 (NAD 83).

Differential Correction - A process applied to raw GPS data that removes certain types of errors; primarily, the error introduced by Selective Availability. This process requires correction data from a reference GPS receiver operating from a precisely known location. Correction data must be obtained from a recognized, reliable source (such as the reference network maintained by the Texas Department of Transportation) or Racal LandStar, and certain Trimble units, provide a satellite delivered GPS correction service, which provide 24 hour accurate and reliable real time precise positioning on land and in the air. For full coverage in Texas, the differential signal is transmitted to the user by high-power geostationary satellites. The GPS and differential signal are both received by the GPS via a single antenna.

A single position reading obtained through appropriate use of real-time correction must have sub-meter accuracy.

Collection Methods - GPS data may be collected using one of three methods:

- **Superimposed** - The superimposed method involves standing on top of or next to the subject for which you are collecting GPS locational data. Collect 60-100 readings.
- **Centroid** - The centroid method is used when the superimposed method cannot be used (e.g. well inside a locked fence or structure). Take points equal distance from the desired point by starting and stopping the GPS and by averaging these points. The unit will average the point for each reading and then all the points as one point which will be the center of all the readings. Collect a minimum of 30 readings per point prior to averaging.



**STANDARD OPERATING PROCEDURE NO. 17.1
GLOBAL POSITIONING SYSTEM DATA
COLLECTION AND SUBMISSION**

SOP#: 17.1
DATE: 12/4/2003
REVISION #: 0
PAGE 3 of 8

- **Offset** - The offset method is used when the superimposed method cannot be used and only when accurate offset measurements can be made (e.g. Using a laser rangefinder, tape measure, etc.) The potential error associated with the offset measurement must be added to the potential error associated with the GPS measurement. A note in the GPS logging software and the field log book of bearing and distance from the offset location can be used but location must be corrected before it is entered into a table or shape file.
- **Points** - The point is used for well and sample locations, gates, sub-meter objects, etc.
- **Line** - The line is used for trail, road, stream, berm, etc.
- **Polygon** - The polygon is used for buildings, site boundary, waste area, ponds or piles, etc. If it is hard to walk the entire perimeter, readings can be taken at each corner of the polygon by starting and stopping the GPS at the corners and within the same Station. The program will add the line in between the points of the Station to create a polygon.

5.0 DATA SUBMITTALS

Correction Status - All GPS data submitted must have a field indicating each record's differential correction status. There are only two selections available:

- **Differential Correction** - Indicates that the record has been differentially corrected.
- **Uncorrected** - Indicates that the record has not been differentially corrected.

Offset - The offset points must be noted in the field log book and actual points calculated before entering the station into the final database or shape file.

Events - Each event must be in separate data table or shape file.

Data Sets - Each data set must be in separate file or layer (e.g All wells, buildings, site boundaries, sample results/event, site features, roads, trails, utilities, etc. must be in separate layers/tables).

Arc View files - All data must be in Decimal Degrees, NAD 83 exported to Arc View 3.2 as a shape files with the relevant metadata, a hard copy of the Arc View tables must accompany the electronic version for TCEQ submittal.

Field Log Book - Site name location and details of field activity must be noted in the field log book, including the name and coordinates of each station and bearing and distance details describing any station off-sets.

Minimum Attributes - All GPS data submitted to TCEQ should conform to the data attributes defined in Table 1.



STANDARD OPERATING PROCEDURE NO. 17.1
GLOBAL POSITIONING SYSTEM DATA
COLLECTION AND SUBMISSION

SOP#: 17.1
DATE: 12/4/2003
REVISION #: 0
PAGE 5 of 8

Data Format - GPS data submitted to TCEQ should be in electronic format (dBASE IV, .dbf file format is preferred). The following is an example of how the data table should be structured. The data may be submitted via email, on diskette, or CD.

Table 2														
Third Party GPS Data														
Example Data Table														
Latitude	Longitude	Site Name	Station Name	Station Reference/Comments	Collector Name	TCEQ GPS Certificate Number	Datum	Collection Method	Max PDO P	Receiver Type	Correction Status	GPS Date	GPS Time	Total Positions
11.111000	99.999000	Pioneer	MW-21	NW Corner	Terry, D	95081107	NAD83	Superimposed	4.4	Trimble XRS DGPS	Differential Correction	5/22/00	10:10 AM	61
11.111100	99.999100	Pioneer	MW-22	Center of the facility	Terry, D	95081107	NAD83	Centroid	5.2	Trimble XRS DGPS	Differential Correction	5/22/00	10:25 AM	108
11.111200	99.999200	Pioneer	MW-23	S of entrance	Terry, D.	95081107	NAD83	Superimposed	3.5	Trimble XRS DGPS	Differential Correction	5/22/00	1:38 PM	66
11.111200	99.999200	Pioneer	site location	South Entrance of facility	Terry, D.	95081107	NAD83	Superimposed	3.5	Trimble XRS DGPS	Differential Correction	5/22/00	3:38 PM	60



**STANDARD OPERATING PROCEDURE NO. 17.1
GLOBAL POSITIONING SYSTEM DATA
COLLECTION AND SUBMISSION**

SOP#: 17.1
DATE: 12/4/2003
REVISION #: 0
PAGE 6 of 8

**Third Party GPS Training Certification
Minimum Qualifications
Texas Natural Resource Conservation Commission**

TCEQ OPP 8.12 requires all GPS training courses to include both lecture/classroom discussion and hands-on exercises. Table 1 contains the minimum elements that must be included in any TCEQ-recognized GPS certification training course

Table 1 GPS Certification Training Minimum Elements	
Minimum lecture and/or demonstration elements	Minimum hands-on exercises, to be successfully completed by each student
Q Background of the Global Positioning System. Q GPS accuracy issues. Q Relevant Agency operating policies. Q Operation of GPS equipment, including basic troubleshooting. Q Data collection procedures. Q Differential correction, both real time processing and post processing. Q Coordinate averaging for point locations. Q Data output in formats appropriate for import to GIS or tabular databases.	Q Pre-planning, including data quality objectives, equipment and materials needed, logistics of field data collection, and prediction of GPS data collection conditions. Q Navigation to a given coordinate. Q Storing and transferring raw positional data. Q Differential correction of raw data through post processing. Q Averaging corrected point data and outputting to a GIS file.
Class exercises shall also include computer plotting of point data to allow students to better understand GPS accuracy issues and the effects of differential correction and point data averaging.	
Note: All certified GPS users recognized by TCEQ must be recertified every 2 years; § Sales or user demonstrations do NOT constitute GPS training; § GPS training courses should last a minimum of six to eight hours; § The TCEQ GPS operating policy is available online at: http://www.tceq.state.tx.us/gis/gisplcy.html	



**STANDARD OPERATING PROCEDURE NO. 17.1
GLOBAL POSITIONING SYSTEM DATA
COLLECTION AND SUBMISSION**

SOP#: 17.1
DATE: 12/4/2003
REVISION #: 0
PAGE 7 of 8

Individuals obtaining or with current GPS certification training must verify that the instruction they have received meets the minimum elements listed in Table 1. Therefore, fill out the attached form, along with copies of GPS training certificates, and return them to:

David P. Terry
TCEQ GPS Coordinator (MCC-155)
SWAP Team
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087
(512) 239 4755
Email: dterry@tceq.state.tx.us



**STANDARD OPERATING PROCEDURE NO. 17.1
GLOBAL POSITIONING SYSTEM DATA
COLLECTION AND SUBMISSION**

SOP#: 17.1
DATE: 12/4/2003
REVISION #: 0
PAGE 8 of 8

**GPS Certification Verification Form
Texas Commission on Environmental Quality**

Contact Information				
GPS Training Coordinator Information			Training Provider Information	
Name			Organization Providing GPS Training	
Organization			Instructor	
Mailing Address			Course Name	
City	State	ZIP	Course Date	Course Hours
Email Address			GPS System (e.g. Trimble, Magellan, etc.)	Manufacture
				Yes <input type="checkbox"/> No <input type="checkbox"/>

The following individual(s) have received GPS certification training that complies with TCEQ OPP 8.12 minimum training elements:

Name	Title

I hereby state that the information provided is true, accurate, and complete to the best of my abilities

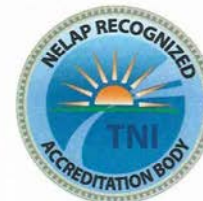
Signature of GPS Training Coordinator or GPS Trainer	Title	Date
Printed Name	Telephone Number	Extension

Appendix C: Laboratory NELAP Accreditation



Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664-3801

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704211-17-19
Effective Date: 5/1/2017
Expiration Date: 4/30/2018

A handwritten signature in black ink, appearing to read "R. A. Hylb", written over a horizontal line.

Executive Director Texas Commission on
Environmental Quality



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19
Expiration Date: 4/30/2018
Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Method EPA 1010			
Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606
Method EPA 120.1			
Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403
Method EPA 1311			
Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806
Method EPA 1312			
Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003
Method EPA 150.1			
Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10008409
Method EPA 160.1			
Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	10009208
Method EPA 160.2			
Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	10009606
Method EPA 1664			
Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807
Method EPA 180.1			
Analyte	AB	Analyte ID	Method ID
Turbidity	TX	2055	10011606
Method EPA 200.8			
Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605
Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053006
Chloride	TX	1575	10053006



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Fluoride	TX	1730	10053006
Nitrate as N	TX	1810	10053006
Nitrate-nitrite	TX	1820	10053006
Nitrite as N	TX	1840	10053006
Orthophosphate as P	TX	1870	10053006
Sulfate	TX	2000	10053006
Method EPA 305.1			
Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO ₃	TX	1500	10054203
Method EPA 310.1			
Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO ₃	TX	1505	10054805
Method EPA 335.1			
Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001
Method EPA 335.2			
Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10060205
Method EPA 365.2			
Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070403
Phosphorus	TX	1910	10070403
Method EPA 376.2			
Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074609
Method EPA 415.1			
Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407
Method EPA 6020			
Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204
Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 608

Analyte
Aroclor-1016 (PCB-1016)

AB	Analyte ID	Method ID
TX	8880	10103603



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207
cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
Total trihalomethanes	TX	5205	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	AB	Analyte ID	Method ID
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

2,3,4,6-Tetrachlorophenol	TX	6735	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401
2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4,4'-DDD	TX	7355	10107401
4,4'-DDE	TX	7360	10107401
4,4'-DDT	TX	7365	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Aldrin	TX	7025	10107401
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10107401
alpha-Chlordane	TX	7240	10107401
Anthracene	TX	5555	10107401
Aroclor-1016 (PCB-1016)	TX	8880	10107401
Aroclor-1221 (PCB-1221)	TX	8885	10107401



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Aroclor-1232 (PCB-1232)	TX	8890	10107401
Aroclor-1242 (PCB-1242)	TX	8895	10107401
Aroclor-1248 (PCB-1248)	TX	8900	10107401
Aroclor-1254 (PCB-1254)	TX	8905	10107401
Aroclor-1260 (PCB-1260)	TX	8910	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Dieldrin	TX	7470	10107401
Diethyl phthalate	TX	6070	10107401
Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Endosulfan I	TX	7510	10107401
Endosulfan II	TX	7515	10107401
Endosulfan sulfate	TX	7520	10107401
Endrin	TX	7540	10107401
Endrin aldehyde	TX	7530	10107401
Fluoranthene	TX	6265	10107401



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Fluorene	TX	6270	10107401
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10107401
gamma-Chlordane	TX	7245	10107401
Heptachlor	TX	7685	10107401
Heptachlor epoxide	TX	7690	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401
Toxaphene (Chlorinated camphene)	TX	8250	10107401

Method EPA 7196

Analyte	AB	Analyte ID	Method ID
Chromium (VI)	TX	1045	10162400

Method EPA 7470

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10165807



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Propylene Glycol	TX	6657	10173203

Method EPA 8082

Analyte	AB	Analyte ID	Method ID
Aroclor-1016 (PCB-1016)	TX	8880	10179007
Aroclor-1221 (PCB-1221)	TX	8885	10179007
Aroclor-1232 (PCB-1232)	TX	8890	10179007
Aroclor-1242 (PCB-1242)	TX	8895	10179007
Aroclor-1248 (PCB-1248)	TX	8900	10179007
Aroclor-1254 (PCB-1254)	TX	8905	10179007
Aroclor-1260 (PCB-1260)	TX	8910	10179007
PCBs (total)	TX	8870	10179007

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184802
1,1,1-Trichloroethane	TX	5160	10184802
1,1,2,2-Tetrachloroethane	TX	5110	10184802
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184802
1,1,2-Trichloroethane	TX	5165	10184802
1,1-Dichloroethane	TX	4630	10184802
1,1-Dichloroethylene	TX	4640	10184802
1,1-Dichloropropene	TX	4670	10184802
1,2,3-Trichlorobenzene	TX	5150	10184802
1,2,3-Trichloropropane	TX	5180	10184802
1,2,4-Trichlorobenzene	TX	5155	10184802
1,2,4-Trimethylbenzene	TX	5210	10184802
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184802



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184802
1,2-Dichlorobenzene	TX	4610	10184802
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184802
1,2-Dichloropropane	TX	4655	10184802
1,3,5-Trimethylbenzene	TX	5215	10184802
1,3-Dichlorobenzene	TX	4615	10184802
1,3-Dichloropropane	TX	4660	10184802
1,4-Dichlorobenzene	TX	4620	10184802
1-Chlorohexane	TX	4510	10184802
2,2-Dichloropropane	TX	4665	10184802
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184802
2-Chloroethyl vinyl ether	TX	4500	10184802
2-Chlorotoluene	TX	4535	10184802
2-Hexanone (MBK)	TX	4860	10184802
4-Chlorotoluene	TX	4540	10184802
4-Isopropyltoluene (p-Cymene)	TX	4915	10184802
4-Methyl-2-pentanone (MIBK)	TX	4995	10184802
Acetone (2-Propanone)	TX	4315	10184802
Acrolein (Propenal)	TX	4325	10184802
Acrylonitrile	TX	4340	10184802
Benzene	TX	4375	10184802
Bromobenzene	TX	4385	10184802
Bromochloromethane	TX	4390	10184802
Bromodichloromethane	TX	4395	10184802
Bromoform	TX	4400	10184802
Carbon disulfide	TX	4450	10184802
Carbon tetrachloride	TX	4455	10184802
Chlorobenzene	TX	4475	10184802
Chlorodibromomethane	TX	4575	10184802
Chloroethane (Ethyl chloride)	TX	4485	10184802



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Chloroform	TX	4505	10184802
cis-1,2-Dichloroethylene	TX	4645	10184802
cis-1,3-Dichloropropene	TX	4680	10184802
Dibromomethane (Methylene bromide)	TX	4595	10184802
Dichlorodifluoromethane (Freon-12)	TX	4625	10184802
Di-isopropylether (DIPE)	TX	9375	10184802
Ethylbenzene	TX	4765	10184802
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184802
Hexachlorobutadiene	TX	4835	10184802
Iodomethane (Methyl iodide)	TX	4870	10184802
Isopropylbenzene (Cumene)	TX	4900	10184802
m+p-xylene	TX	5240	10184802
Methyl acetate	TX	4940	10184802
Methyl bromide (Bromomethane)	TX	4950	10184802
Methyl chloride (Chloromethane)	TX	4960	10184802
Methyl tert-butyl ether (MTBE)	TX	5000	10184802
Methylcyclohexane	TX	4965	10184802
Methylene chloride (Dichloromethane)	TX	4975	10184802
Naphthalene	TX	5005	10184802
n-Butylbenzene	TX	4435	10184802
n-Propylbenzene	TX	5090	10184802
o-Xylene	TX	5250	10184802
sec-Butylbenzene	TX	4440	10184802
Styrene	TX	5100	10184802
T-amylmethylether (TAME)	TX	4370	10184802
tert-Butyl alcohol	TX	4420	10184802
tert-Butylbenzene	TX	4445	10184802
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184802
Toluene	TX	5140	10184802
Total trihalomethanes	TX	5205	10184802



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19
Expiration Date: 4/30/2018
Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

trans-1,2-Dichloroethylene	TX	4700	10184802
trans-1,3-Dichloropropylene	TX	4685	10184802
trans-1,4-Dichloro-2-butene	TX	4605	10184802
Trichloroethene (Trichloroethylene)	TX	5170	10184802
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184802
Vinyl acetate	TX	5225	10184802
Vinyl chloride	TX	5235	10184802
Xylene (total)	TX	5260	10184802

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185805
1,2,4,5-Tetrachlorobenzene	TX	6715	10185805
1,2,4-Trichlorobenzene	TX	5155	10185805
1,2-Dichlorobenzene	TX	4610	10185805
1,2-Diphenylhydrazine	TX	6220	10185805
1,3-Dichlorobenzene	TX	4615	10185805
1,4-Dichlorobenzene	TX	4620	10185805
1-Naphthylamine	TX	6425	10185805
2,3,4,6-Tetrachlorophenol	TX	6735	10185805
2,4,5-Trichlorophenol	TX	6835	10185805
2,4,6-Trichlorophenol	TX	6840	10185805
2,4-Dichlorophenol	TX	6000	10185805
2,4-Dimethylphenol	TX	6130	10185805
2,4-Dinitrophenol	TX	6175	10185805
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185805
2,6-Dichlorophenol	TX	6005	10185805
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185805
2-Chloronaphthalene	TX	5795	10185805
2-Chlorophenol	TX	5800	10185805
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185805



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

2-Methylnaphthalene	TX	6385	10185805
2-Methylphenol (o-Cresol)	TX	6400	10185805
2-Naphthylamine	TX	6430	10185805
2-Nitroaniline	TX	6460	10185805
2-Nitrophenol	TX	6490	10185805
2-Picoline (2-Methylpyridine)	TX	5050	10185805
3,3'-Dichlorobenzidine	TX	5945	10185805
3-Methylcholanthrene	TX	6355	10185805
3-Nitroaniline	TX	6465	10185805
4,4'-DDD	TX	7355	10185805
4,4'-DDE	TX	7360	10186002
4,4'-DDT	TX	7365	10185805
4-Aminobiphenyl	TX	5540	10185805
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185805
4-Chloro-3-methylphenol	TX	5700	10185805
4-Chloroaniline	TX	5745	10185805
4-Chlorophenyl phenylether	TX	5825	10185805
4-Dimethyl aminoazobenzene	TX	6105	10185805
4-Methylphenol (p-Cresol)	TX	6410	10185805
4-Nitroaniline	TX	6470	10185805
4-Nitrophenol	TX	6500	10185805
7,12-Dimethylbenz(a) anthracene	TX	6115	10185805
a-a-Dimethylphenethylamine	TX	6125	10185805
Acenaphthene	TX	5500	10185805
Acenaphthylene	TX	5505	10185805
Acetophenone	TX	5510	10185805
Aldrin	TX	7025	10186002
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10186002
alpha-Chlordane	TX	7240	10185601
Aniline	TX	5545	10185805



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Anthracene	TX	5555	10185805
Aroclor-1016 (PCB-1016)	TX	8880	10186002
Aroclor-1221 (PCB-1221)	TX	8885	10185203
Aroclor-1232 (PCB-1232)	TX	8890	10185407
Aroclor-1242 (PCB-1242)	TX	8895	10185203
Aroclor-1248 (PCB-1248)	TX	8900	10186002
Aroclor-1254 (PCB-1254)	TX	8905	10185601
Aroclor-1260 (PCB-1260)	TX	8910	10185203
Atrazine	TX	7065	10185805
Azinphos-methyl (Guthion)	TX	7075	10185805
Benzidine	TX	5595	10185805
Benzo(a)anthracene	TX	5575	10185805
Benzo(a)pyrene	TX	5580	10185805
Benzo(b)fluoranthene	TX	5585	10185805
Benzo(e)pyrene	TX	5605	10185805
Benzo(g,h,i)perylene	TX	5590	10185805
Benzo(k)fluoranthene	TX	5600	10185805
Benzoic acid	TX	5610	10185805
Benzyl alcohol	TX	5630	10185805
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10185203
Biphenyl	TX	5640	10185805
bis(2-Chloroethoxy)methane	TX	5760	10185805
bis(2-Chloroethyl) ether	TX	5765	10185805
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185805
Butyl benzyl phthalate	TX	5670	10185805
Caprolactam	TX	7180	10185805
Carbaryl (Sevin)	TX	7195	10185407
Carbazole	TX	5680	10185805
Carbophenothion	TX	7220	10185407
Chlordane (tech.)	TX	7250	10185203



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Chlorfenvinphos	TX	7255	10185805
Chrysene	TX	5855	10185805
Coumaphos	TX	7315	10186002
Crotoxypfos	TX	7330	10185407
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10185805
Demeton	TX	7390	10185407
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185601
Dibenz(a,h) anthracene	TX	5895	10185805
Dibenzofuran	TX	5905	10185805
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10186002
Dicrotophos	TX	7465	10185407
Dieldrin	TX	7470	10186002
Diethyl phthalate	TX	6070	10185805
Dimethoate	TX	7475	10185805
Dimethyl phthalate	TX	6135	10185805
Di-n-butyl phthalate	TX	5925	10185805
Di-n-octyl phthalate	TX	6200	10185805
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185805
Disulfoton	TX	8625	10185601
Endosulfan I	TX	7510	10185805
Endosulfan II	TX	7515	10185203
Endosulfan sulfate	TX	7520	10185601
Endrin	TX	7540	10185203
Endrin aldehyde	TX	7530	10185805
Endrin ketone	TX	7535	10186002
EPN (Phosphonothioic acid, phenyl-, O-ethyl O-(p-nitrophenyl) ester)	TX	7550	10186002
Ethion	TX	7565	10185805
Ethyl methanesulfonate	TX	6260	10185805



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Famphur	TX	7580	10185407
Fensulfothion	TX	7600	10185203
Fenthion	TX	7605	10186002
Fluoranthene	TX	6265	10185805
Fluorene	TX	6270	10185805
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10185203
gamma-Chlordane	TX	7245	10185203
Heptachlor	TX	7685	10185601
Heptachlor epoxide	TX	7690	10185805
Hexachlorobenzene	TX	6275	10185805
Hexachlorobutadiene	TX	4835	10185805
Hexachlorocyclopentadiene	TX	6285	10185805
Hexachloroethane	TX	4840	10185805
Hexachlorophene	TX	6290	10185805
Indeno(1,2,3-cd) pyrene	TX	6315	10185805
Isodrin	TX	7725	10185407
Isophorone	TX	6320	10185805
Leptophos	TX	7755	10186002
Malathion	TX	7770	10186002
Methoxychlor	TX	7810	10185601
Methyl methanesulfonate	TX	6375	10185805
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10186002
Monocrotophos	TX	7880	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185805
Nitrobenzene	TX	5015	10185805
n-Nitrosodiethylamine	TX	6525	10185805
n-Nitrosodimethylamine	TX	6530	10185805
n-Nitrosodi-n-butylamine	TX	5025	10185805



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

n-Nitrosodi-n-propylamine	TX	6545	10185805
n-Nitrosodiphenylamine	TX	6535	10185805
n-Nitrosopiperidine	TX	6560	10185805
Parathion, ethyl	TX	7955	10185805
Pentachlorobenzene	TX	6590	10185805
Pentachloronitrobenzene (PCNB)	TX	6600	10185805
Pentachlorophenol	TX	6605	10185805
Phenacetin	TX	6610	10185805
Phenanthrene	TX	6615	10185805
Phenol	TX	6625	10185805
Phorate	TX	7985	10186002
Phosmet (Imidan)	TX	8000	10186002
Phosphamidon	TX	8005	10185805
Pronamide (Kerb)	TX	6650	10185805
Pyrene	TX	6665	10185805
Pyridine	TX	5095	10185805
Quinoline	TX	6670	10185805
Sulfotepp	TX	8155	10186002
Terbufos	TX	8185	10185805
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10186002
Tetraethyl pyrophosphate (TEPP)	TX	8210	10185407
Toxaphene (Chlorinated camphene)	TX	8250	10185203

Method EPA 8321

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10188804
2,4-D	TX	8545	10188804
2,4-DB	TX	8560	10188804
Dalapon	TX	8555	10188804
Dicamba	TX	8595	10188804
Dichloroprop (Dichloroprop, Weedone)	TX	8605	10188804



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10188804
MCPA	TX	7775	10188804
MCPD	TX	7780	10188804
Silvex (2,4,5-TP)	TX	8650	10188804
Method EPA 8330			
Analyte	AB	Analyte ID	Method ID
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Nitroglycerin	TX	6485	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
Pentaerythritoltetranitrate (PETN)	TX	9558	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807
Method EPA 9014			
Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10193803
Total Cyanide	TX	1635	10193803
Method EPA 9040			
Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10197203
Method EPA 9056			
Analyte	AB	Analyte ID	Method ID



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199607
Sulfate	TX	2000	10199209
Method EPA 9060			
Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201
Method EPA 9070			
Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201000
Method EPA RSK 175			
Analyte	AB	Analyte ID	Method ID
Carbon dioxide	TX	3755	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905
Method HACH 8000			
Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001
Method SM 2130 B			
Analyte	AB	Analyte ID	Method ID
Turbidity	TX	2055	20048220
Method SM 2310 B (4a)			
Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO ₃	TX	1500	20044615



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Method SM 2320 B			
Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO ₃	TX	1505	20045618
Method SM 2340 B			
Analyte	AB	Analyte ID	Method ID
Total hardness as CaCO ₃	TX	1755	20046611
Method SM 2510 B			
Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	20048617
Method SM 2540 C			
Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	20050413
Method SM 2540 D			
Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	20051212
Method SM 2540 F			
Analyte	AB	Analyte ID	Method ID
Residue-settleable	TX	1965	20005009
Method SM 3500-Cr B			
Analyte	AB	Analyte ID	Method ID
Chromium (VI)	TX	1045	20066017
Method SM 4500-CN ⁻ E			
Analyte	AB	Analyte ID	Method ID
Total Cyanide	TX	1635	20096428
Method SM 4500-CN ⁻ G			
Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	20097227
Method SM 4500-H ⁺ B			
Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20105220
Method SM 4500-NH ₃ D			
Analyte	AB	Analyte ID	Method ID



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19
Expiration Date: 4/30/2018
Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Non-Potable Water*

Ammonia as N	TX	1515	20109415
Method SM 4500-P E			
Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20124225
Phosphorus	TX	1910	20124225
Method SM 4500-S2 ⁻ D			
Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20125864
Method SM 5220 D			
Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	20136816
Method SM 5310 C			
Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20138823
Method TCEQ 1005			
Analyte	AB	Analyte ID	Method ID
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

Method ASTM D2216			
Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05
Method EPA 1010			
Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606
Method EPA 1311			
Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806
Method EPA 1312			
Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003
Method EPA 200.8			
Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605
Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605
Method EPA 300.0			
Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053006
Chloride	TX	1575	10053006
Fluoride	TX	1730	10053006
Nitrate as N	TX	1810	10053006
Nitrate-nitrite	TX	1820	10053006
Nitrite as N	TX	1840	10053006
Sulfate	TX	2000	10053006
Method EPA 310.1			
Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO ₃	TX	1505	10054805
Method EPA 350.3			
Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401
Method EPA 365.2			
Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070403
Phosphorus	TX	1910	10070403
Method EPA 6020			
Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204
Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte
Chromium (VI)

AB	Analyte ID	Method ID
TX	1045	10162400



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19
Expiration Date: 4/30/2018
Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

Method EPA 7470

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10165807

Method EPA 7471

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10166208

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Propylene Glycol	TX	6657	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174808
Ethylbenzene	TX	4765	10174808
m+p-xylene	TX	5240	10174808
Methyl tert-butyl ether (MTBE)	TX	5000	10174808
o-Xylene	TX	5250	10174808
Toluene	TX	5140	10174808
Xylene (total)	TX	5260	10174808

Method EPA 8082

Analyte	AB	Analyte ID	Method ID
Aroclor-1016 (PCB-1016)	TX	8880	10179007
Aroclor-1221 (PCB-1221)	TX	8885	10179007
Aroclor-1232 (PCB-1232)	TX	8890	10179007
Aroclor-1242 (PCB-1242)	TX	8895	10179007
Aroclor-1248 (PCB-1248)	TX	8900	10179007
Aroclor-1254 (PCB-1254)	TX	8905	10179007
Aroclor-1260 (PCB-1260)	TX	8910	10179007
PCBs (total)	TX	8870	10179007



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184802
1,1,1-Trichloroethane	TX	5160	10184802
1,1,2,2-Tetrachloroethane	TX	5110	10184802
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184802
1,1,2-Trichloroethane	TX	5165	10184802
1,1-Dichloroethane	TX	4630	10184802
1,1-Dichloroethylene	TX	4640	10184802
1,1-Dichloropropene	TX	4670	10184802
1,2,3-Trichlorobenzene	TX	5150	10184802
1,2,3-Trichloropropane	TX	5180	10184802
1,2,4-Trichlorobenzene	TX	5155	10184802
1,2,4-Trimethylbenzene	TX	5210	10184802
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184802
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184802
1,2-Dichlorobenzene	TX	4610	10184802
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184802
1,2-Dichloropropane	TX	4655	10184802
1,3,5-Trimethylbenzene	TX	5215	10184802
1,3-Dichlorobenzene	TX	4615	10184802
1,3-Dichloropropane	TX	4660	10184802
1,4-Dichlorobenzene	TX	4620	10184802
1-Chlorohexane	TX	4510	10184802
2,2-Dichloropropane	TX	4665	10184802
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184802
2-Chloroethyl vinyl ether	TX	4500	10184802
2-Chlorotoluene	TX	4535	10184802
2-Hexanone (MBK)	TX	4860	10184802
4-Chlorotoluene	TX	4540	10184802



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

4-Isopropyltoluene (p-Cymene)	TX	4915	10184802
4-Methyl-2-pentanone (MIBK)	TX	4995	10184802
Acetone (2-Propanone)	TX	4315	10184802
Acrolein (Propenal)	TX	4325	10184802
Acrylonitrile	TX	4340	10184802
Benzene	TX	4375	10184802
Bromobenzene	TX	4385	10184802
Bromochloromethane	TX	4390	10184802
Bromodichloromethane	TX	4395	10184802
Bromoform	TX	4400	10184802
Carbon disulfide	TX	4450	10184802
Carbon tetrachloride	TX	4455	10184802
Chlorobenzene	TX	4475	10184802
Chlorodibromomethane	TX	4575	10184802
Chloroethane (Ethyl chloride)	TX	4485	10184802
Chloroform	TX	4505	10184802
cis-1,2-Dichloroethylene	TX	4645	10184802
cis-1,3-Dichloropropene	TX	4680	10184802
Dibromomethane (Methylene bromide)	TX	4595	10184802
Dichlorodifluoromethane (Freon-12)	TX	4625	10184802
Ethylbenzene	TX	4765	10184802
Hexachlorobutadiene	TX	4835	10184802
Iodomethane (Methyl iodide)	TX	4870	10184802
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184802
Isopropylbenzene (Cumene)	TX	4900	10184802
m+p-xylene	TX	5240	10184802
Methyl acetate	TX	4940	10184802
Methyl bromide (Bromomethane)	TX	4950	10184802
Methyl chloride (Chloromethane)	TX	4960	10184802
Methyl tert-butyl ether (MTBE)	TX	5000	10184802



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: Solid & Chemical Materials

Methylcyclohexane	TX	4965	10184802
Methylene chloride (Dichloromethane)	TX	4975	10184802
Naphthalene	TX	5005	10184802
n-Butylbenzene	TX	4435	10184802
n-Propylbenzene	TX	5090	10184802
o-Xylene	TX	5250	10184802
sec-Butylbenzene	TX	4440	10184802
Styrene	TX	5100	10184802
tert-Butylbenzene	TX	4445	10184802
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184802
Toluene	TX	5140	10184802
trans-1,2-Dichloroethylene	TX	4700	10184802
trans-1,3-Dichloropropylene	TX	4685	10184802
trans-1,4-Dichloro-2-butene	TX	4605	10184802
Trichloroethene (Trichloroethylene)	TX	5170	10184802
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184802
Vinyl acetate	TX	5225	10184802
Vinyl chloride	TX	5235	10184802
Xylene (total)	TX	5260	10184802

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185805
1,2,4,5-Tetrachlorobenzene	TX	6715	10185805
1,2,4-Trichlorobenzene	TX	5155	10185805
1,2-Dichlorobenzene	TX	4610	10185805
1,2-Diphenylhydrazine	TX	6220	10185805
1,3-Dichlorobenzene	TX	4615	10185805
1,4-Dichlorobenzene	TX	4620	10185805
1-Naphthylamine	TX	6425	10185805
2,3,4,6-Tetrachlorophenol	TX	6735	10185805



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

2,4,5-Trichlorophenol	TX	6835	10185805
2,4,6-Trichlorophenol	TX	6840	10185805
2,4-Dichlorophenol	TX	6000	10185805
2,4-Dimethylphenol	TX	6130	10185805
2,4-Dinitrophenol	TX	6175	10185805
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185805
2,6-Dichlorophenol	TX	6005	10185805
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185805
2-Chloronaphthalene	TX	5795	10185805
2-Chlorophenol	TX	5800	10185805
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185805
2-Methylnaphthalene	TX	6385	10185805
2-Methylphenol (o-Cresol)	TX	6400	10185805
2-Naphthylamine	TX	6430	10185805
2-Nitroaniline	TX	6460	10185805
2-Nitrophenol	TX	6490	10185805
2-Picoline (2-Methylpyridine)	TX	5050	10185805
3,3'-Dichlorobenzidine	TX	5945	10185805
3-Methylcholanthrene	TX	6355	10185805
3-Nitroaniline	TX	6465	10185805
4,4'-DDD	TX	7355	10185203
4,4'-DDE	TX	7360	10186002
4,4'-DDT	TX	7365	10185407
4-Aminobiphenyl	TX	5540	10185805
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185805
4-Chloro-3-methylphenol	TX	5700	10185805
4-Chloroaniline	TX	5745	10185805
4-Chlorophenyl phenylether	TX	5825	10185805
4-Dimethyl aminoazobenzene	TX	6105	10185805
4-Methylphenol (p-Cresol)	TX	6410	10185805



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19
Expiration Date: 4/30/2018
Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

4-Nitroaniline	TX	6470	10185805
4-Nitrophenol	TX	6500	10185805
7,12-Dimethylbenz(a) anthracene	TX	6115	10185805
a-a-Dimethylphenethylamine	TX	6125	10185805
Acenaphthene	TX	5500	10185805
Acenaphthylene	TX	5505	10185805
Acetophenone	TX	5510	10185805
Aldrin	TX	7025	10186002
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10185407
alpha-Chlordane	TX	7240	10185805
Aniline	TX	5545	10185805
Anthracene	TX	5555	10185805
Aroclor-1016 (PCB-1016)	TX	8880	10186002
Aroclor-1221 (PCB-1221)	TX	8885	10185805
Aroclor-1232 (PCB-1232)	TX	8890	10185407
Aroclor-1242 (PCB-1242)	TX	8895	10185407
Aroclor-1248 (PCB-1248)	TX	8900	10185805
Aroclor-1254 (PCB-1254)	TX	8905	10185805
Aroclor-1260 (PCB-1260)	TX	8910	10185407
Atrazine	TX	7065	10185805
Azinphos-methyl (Guthion)	TX	7075	10185203
Benzidine	TX	5595	10185805
Benzo(a)anthracene	TX	5575	10185805
Benzo(a)pyrene	TX	5580	10185805
Benzo(b)fluoranthene	TX	5585	10185805
Benzo(e)pyrene	TX	5605	10185805
Benzo(g,h,i)perylene	TX	5590	10185805
Benzo(k)fluoranthene	TX	5600	10185805
Benzoic acid	TX	5610	10185805
Benzyl alcohol	TX	5630	10185805



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10185601
Biphenyl	TX	5640	10185805
bis(2-Chloroethoxy)methane	TX	5760	10185805
bis(2-Chloroethyl) ether	TX	5765	10185805
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185805
Butyl benzyl phthalate	TX	5670	10185805
Caprolactam	TX	7180	10185805
Carbaryl (Sevin)	TX	7195	10185601
Carbazole	TX	5680	10185805
Carbophenothion	TX	7220	10185805
Chlordane (tech.)	TX	7250	10185805
Chlorfenvinphos	TX	7255	10185203
Chrysene	TX	5855	10185805
Coumaphos	TX	7315	10185805
Crotoxyphos	TX	7330	10185203
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10186002
Demeton	TX	7390	10185805
Demeton-o	TX	7395	10185805
Demeton-s	TX	7385	10185601
Dibenz(a,h) anthracene	TX	5895	10185805
Dibenzofuran	TX	5905	10185805
Dichlorvos (DDVP, Dichlorvos)	TX	8610	10185805
Dicrotophos	TX	7465	10185805
Dieldrin	TX	7470	10185407
Diethyl phthalate	TX	6070	10185805
Dimethoate	TX	7475	10185805
Dimethyl phthalate	TX	6135	10185805
Di-n-butyl phthalate	TX	5925	10185805
Di-n-octyl phthalate	TX	6200	10185805
Dioxathion	TX	7495	10185601



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19
Expiration Date: 4/30/2018
Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

Diphenylamine	TX	6205	10185805
Disulfoton	TX	8625	10185407
Endosulfan I	TX	7510	10185601
Endosulfan II	TX	7515	10185805
Endosulfan sulfate	TX	7520	10186002
Endrin	TX	7540	10185601
Endrin aldehyde	TX	7530	10186002
Endrin ketone	TX	7535	10186002
EPN (Phosphonothioic acid, phenyl-, O-ethyl O-(p-nitrophenyl) ester)	TX	7550	10186002
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185805
Famphur	TX	7580	10186002
Fensulfothion	TX	7600	10185805
Fenthion	TX	7605	10186002
Fluoranthene	TX	6265	10185805
Fluorene	TX	6270	10185805
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10185407
gamma-Chlordane	TX	7245	10185601
Heptachlor	TX	7685	10185601
Heptachlor epoxide	TX	7690	10185203
Hexachlorobenzene	TX	6275	10185805
Hexachlorobutadiene	TX	4835	10185805
Hexachlorocyclopentadiene	TX	6285	10185805
Hexachloroethane	TX	4840	10185805
Hexachlorophene	TX	6290	10185601
Indeno(1,2,3-cd) pyrene	TX	6315	10185805
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185805
Leptophos	TX	7755	10185407
Malathion	TX	7770	10185601



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

Methoxychlor	TX	7810	10185203
Methyl methanesulfonate	TX	6375	10185805
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185805
Monocrotophos	TX	7880	10185805
Naled	TX	7905	10185805
Naphthalene	TX	5005	10185805
Nitrobenzene	TX	5015	10185805
n-Nitrosodiethylamine	TX	6525	10185805
n-Nitrosodimethylamine	TX	6530	10185805
n-Nitrosodi-n-butylamine	TX	5025	10185805
n-Nitrosodi-n-propylamine	TX	6545	10185805
n-Nitrosodiphenylamine	TX	6535	10185805
n-Nitrosopiperidine	TX	6560	10185805
Parathion, ethyl	TX	7955	10185805
Pentachlorobenzene	TX	6590	10185805
Pentachloronitrobenzene (PCNB)	TX	6600	10185805
Pentachlorophenol	TX	6605	10185805
Phenacetin	TX	6610	10185805
Phenanthrene	TX	6615	10185805
Phenol	TX	6625	10185805
Phorate	TX	7985	10185407
Phosmet (Imidan)	TX	8000	10185203
Phosphamidon	TX	8005	10186002
Pronamide (Kerb)	TX	6650	10185805
Pyrene	TX	6665	10185805
Pyridine	TX	5095	10185805
Quinoline	TX	6670	10185805
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185805



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: Solid & Chemical Materials

Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10186002
Tetraethyl pyrophosphate (TEPP)	TX	8210	10185407
Toxaphene (Chlorinated camphene)	TX	8250	10185203
Method EPA 8321			
Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10188804
2,4-D	TX	8545	10188804
2,4-DB	TX	8560	10188804
Dalapon	TX	8555	10188804
Dicamba	TX	8595	10188804
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10188804
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10188804
MCPA	TX	7775	10188804
MCPP	TX	7780	10188804
Silvex (2,4,5-TP)	TX	8650	10188804
Method EPA 8330			
Analyte	AB	Analyte ID	Method ID
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Nitroglycerin	TX	6485	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19

Expiration Date: 4/30/2018

Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: Solid & Chemical Materials

Pentaerythritoltetranitrate (PETN)	TX	9558	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807
Method EPA 9014			
Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10193803
Total Cyanide	TX	1635	10193803
Method EPA 9040			
Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10197203
Method EPA 9045			
Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10198400
Method EPA 9056			
Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Sulfate	TX	2000	10199209
Method SM 2320 B			
Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO ₃	TX	1505	20045618
Method SM 2510 B			
Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	20048617
Method SSA/ASA Part 3:14			
Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	60049505



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

Certificate: T104704211-17-19
Expiration Date: 4/30/2018
Issue Date: 5/1/2017

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: *Solid & Chemical Materials*

Method TCEQ 1005

Analyte

Total Petroleum Hydrocarbons (TPH)

AB
TX

Analyte ID
2050

Method ID
90019208

Appendix D: Project Schedule

Task	Bullet Description of Activity	Anticipated Start Date*	Anticipated Date of Completion*
Task 1	Prepare the HASP and review the FSP.	March 13, 2017	May 17, 2017
Task 2	Mobilize to the Site and collect a GPS coordinate; remove five underground storage tanks (USTs), associated piping, and fuel dispensers; remove the hydraulic car lift and associated underground sumps; collect the appropriate number of soil and water samples; and ship samples to the laboratory for analysis.	July 10, 2017	July 11, 2017
Task 3	Review the laboratory data and submit the data review summary and associated analytical data packages.	July 17, 2017	August 14, 2017
Task 4	Prepare and submit the Release Determination Report.	August 1, 2017	August 31, 2017
Task 5	Coordinate with landfill for waste disposal classification/ acceptance and remove investigation-derived waste.	August 1, 2017	August 31, 2017

*Dates subject to change based on field sampling plan approval and TCEQ Notice to Proceed.